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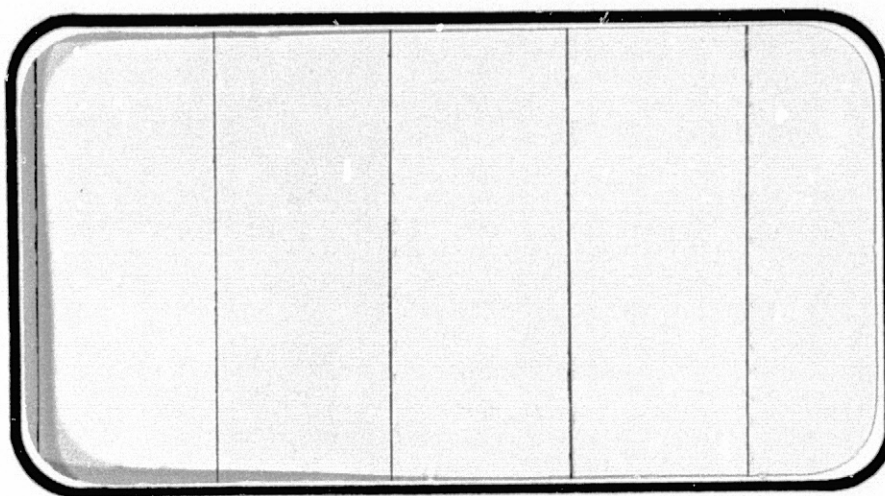




# NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

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(NASA-CR-141534) HEAT TRANSFER TESTS OF AN  
0.006-SCALE THIN-SKIN SPACE SHUTTLE  
THERMOCOUPLE MODEL (41-OTS) IN THE LANGLEY  
RESEARCH CENTER UNITARY PLAN WIND TUNNEL AT  
M EQUALS 3.7 (IH16) (Chrysler Corp.) 700 p

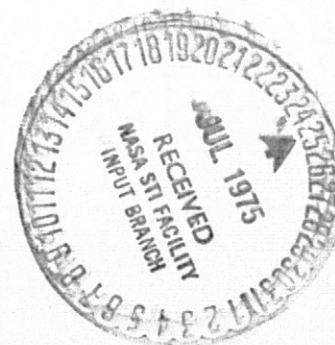
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SPACE SHUTTLE

AEROTHERMODYNAMIC DATA REPORT



JOHNSON SPACE CENTER

HOUSTON, TEXAS

DATA MANAGEMENT services

SPACE DIVISION



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HEAT TRANSFER TESTS OF AN  
0.006-SCALE THIN-SKIN SPACE SHUTTLE THERMOCOUPLE  
MODEL (41-OTS) IN THE LANGLEY RESEARCH CENTER  
UNITARY PLAN WIND TUNNEL AT  $M=3.7$  (IH16)

By

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Prepared under NASA Contract No. NAS9-13247

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Engineering Analysis Division  
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HEAT TRANSFER TESTS OF AN 0.006-SCALE THIN-SKIN  
SPACE SHUTTLE THERMOCOUPLE MODEL (41-OTS) IN THE  
LANGLEY RESEARCH CENTER UNITARY PLAN WIND TUNNEL AT M=3.7 (IH16)

By D. G. Walstad, Rockwell International

ABSTRACT

This report presents the results of supersonic heat transfer tests of the .006 scale Space Shuttle vehicle model (41-OTS) in the Langley Research Center Unitary Plan Wind Tunnel. These tests were conducted to parametrically investigate ascent heating of the Integrated Vehicle and its components. The tests were conducted at a nominal Mach number of 3.7 and Reynolds numbers per foot of 2, and  $5 \times 10^6$ . The model configurations investigated were the integrated vehicle and each component alone (i.e. orbiter, tank and SRB). All the configurations were run with and without transition strips and through an angle of attack range from  $0^\circ$  to  $-5^\circ$  with the exception of the SRB which was tested through an angle of attack range from  $-5^\circ$  to  $90^\circ$ . The heat transfer data were obtained from 223 iron constantan thermocouples attached to stainless steel thin-skin areas of the model.

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## PLOTTED COEFFICIENT SCHEDULE:

(A) H/HREF versus X/L, H/HREF versus X/C

(B) H/HREF versus X/L

## NOMENCLATURE

<u>SYMBOL</u>	<u>PLOT SYMBOL</u>	<u>DEFINITION</u>
$\alpha$	ALPHA	Model angle of attack, deg.
$\beta$	BETA	Angle of sideslip, degrees
b/2	-	Semi-span
b	-	Skin thickness, Ft.
BP	-	Butt plane, in.
c	-	Specific heat of skin material, BTU/LB-°R
C <sub>p</sub>	-	Specific heat at constant pressure
CH	-	Beckman Channel Number
CHI	-	Ratio of model wall equilibrium temperature to free-stream stagnation temperature
COMP	-	Model component
CONFIG	-	Configuration number as defined below:  1 - Integrated vehicle 2 - External tank 3 - Solid rocket booster 4 - Orbiter
CP	-	Specific heat of air at constant pressure
ET	-	External tank
GAP	-	Minimum separation distance between Orbiter and external tank, in.
h	H	Heat transfer coefficient, BTU/SEC-FT <sup>2</sup> -°R
HC	-	Heat transfer coefficient including conduction correction, BTU/SEC-FT <sup>2</sup> -°R
HI	HI	Heat transfer coefficient in an interference region, BTU/SEC-FT <sup>2</sup> -°R

# NOMENCLATURE (Continued)

<u>SYMBOL</u>	<u>PLOT SYMBOL</u>	<u>DEFINITION</u>
$H_{aw}/H_t$	HAW/HT	Ratio of adiabatic wall enthalpy to free-stream total enthalpy
$h_o$	HO	Heat transfer coefficient based on free-stream conditions, BTU/SEC-FT <sup>2</sup> -°R
HU	HU	Heat transfer coefficient in an undisturbed region, BTU/SEC-FT <sup>2</sup> -°R
$h/h_o$	H/HREF	Ratio of experimental heat transfer coefficient to theoretical stagnation point value
k	-	Heat conductivity of skin, BTU/SEC-FT <sup>2</sup> -°R
$M_\infty$	MACH	Free-stream Mach number
n	-	Index indicating thermocouple station
$N_{St_o}$	-	Stanton number based on free-stream conditions
$N_{St_c}$	-	Stanton number based on free-stream conditions and including conduction corrections
$N_{ST,REF}$	-	Reference Stanton number for stagnation point of 0.006-Ft. diameter sphere
ORB	-	Orbiter
PCCHD	X/C	Percent chord (X/C is fraction of chord)
$P_{t1}$	-	Free-stream stagnation pressure, psf
$P_{t2}$	-	Stagnation pressure behind normal shock
$P_\infty$	-	Free-stream static pressure, psf
q	-	Aerodynamic heat input, BTU
$\dot{q}$	QDOT	Heat transfer rate, local, BTU/FT <sup>2</sup> SEC
R	-	Gas constant

# NOMENCLATURE (Continued)

<u>SYMBOL</u>	<u>PLOT SYMBOL</u>	<u>DEFINITION</u>
r	-	Radius of reference sphere, Ft.
RN	RN/L	Free-stream Reynolds number per foot
SRB	-	Solid Rocket Booster
t	-	Time, sec.
TC	-	Thermocouple number
T <sub>e</sub>	-	Equilibrium temp, °R
T <sub>o</sub>	-	Stagnation temp, °R
T <sub>w</sub>	-	Model wall temp, °R
T <sub>w,0</sub>	-	Initial wall temperature, °R
T <sub>w,t</sub>	-	Wall temperature at time, t, °R
V <sub>∞</sub>	-	Free-stream velocity, Ft/SEC
W	-	Material density, Lb/Ft <sup>3</sup>
w	-	W x b, Lb/Ft <sup>2</sup>
W.L.	W.L.	Water line
X	-	Longitudinal distance measured from component nose, in.
X/L	X/L	Ratio of longitudinal distance to component length.
Y	Y(BP)	Spanwise distance measured from center line, in.
y/b/2	2Y/B	Spanwise distance measured from centerline, percent semi-span
φ	PHI	Radial position measured clockwise looking forward, 0 degrees at bottom centerline

# NOMENCLATURE (Concluded)

<u>SYMBOL</u>	<u>PLOT SYMBOL</u>	<u>DEFINITION</u>
$\rho_{\infty}$	-	Free-stream density
$\rho_0$	-	Density based on stagnation temp.
$\rho_w$	-	Density at model wall
$\rho_{t,2}$	-	Stagnation density behind normal shock
$\mu_0$	-	Viscosity based on stagnation temp.
$\mu_{t,2}$	-	Stagnation viscosity behind normal shock
$\mu_w$	-	Viscosity at model wall
$\Delta h$	DELTAH	Minimum separation distance between Orbiter and external tank, in.
$\gamma$	-	Ratio of specific heats for air

## CONFIGURATIONS INVESTIGATED

The Orbiter was a 0.006-scale representation of the modified VL70-00089B lines. The orbiter main body was defined by Grumman drawing SS-H-00326-11. The Orbiter nose was defined by Grumman drawing SS-H-00326-15. Radii of 0.900 inch was provided at the left-hand and right-hand double delta wing junctures. The external tank was defined by the VL72-000061C configuration. Both solid rocket boosters were defined by the VL77-000062B lines.

The Orbiter was a full-span configuration, Stycase-type model (Grumman Material "G"). Thin-skin thermocouple instrumented inserts were located on the Orbiter underside centerline region, left-hand wing underside, and left-hand windshield.

The external tank (ET) and left-hand solid rocket booster (SRB) were constructed of thin-skin (nominal skin thickness of 0.040-in.) 15-5 PH stainless steel. The right-hand SRB was constructed of solid steel material and was not instrumented.

The Orbiter had no provisions for elevon, rudder, or body-flap deflections.

All thermocouple leads were spot-welded to the skin and clamped in bundles at convenient locations within the models.

No. 25 sand grit having a nominal height (K) of 0.0306 inch  $\pm$  0.0026 inch with a lateral spacing of 3K from center to center was used as transition strips. For each model component, grit was cemented to the surface in a



### CONFIGURATIONS INVESTIGATED (Concluded)

circumferential ray at the following longitudinal locations; (a) just ahead of the windshield on the Orbiter, (b) 1.5 inches from the nose on the external tank, and (c) just ahead of the cone-cylinder juncture on the solid rocket boosters.

The following configurations were tested: Dimensional data for these configurations are presented in Table III.

<u>Configuration</u>	<u>Description</u>
B <sub>10</sub>	Fuselage per -89B lines, 2A configuration
C <sub>5</sub>	Orbiter canopy used on fuselage B <sub>10</sub>
D <sub>7</sub>	Manipulator housing per -93 Lines, 2A configuration
F <sub>4</sub>	Aft body flap used on fuselage B <sub>10</sub>
M <sub>3</sub>	OMS Pods per -94A lines, 2A configuration
V <sub>5</sub>	Centerline vertical tail, double wedge airfoil, with rounded leading edges
W <sub>87</sub>	Wing per -93 Lines. Used on fuselage B <sub>10</sub>
T <sub>8</sub>	External tank which attaches to Orbiter
S <sub>6</sub>	Solid rocket booster which attaches to external tank, T <sub>8</sub>

## MODEL INSTRUMENTATION

The Orbiter, external tank, and left-hand solid rocket booster were instrumented with a total of 223 iron-constantan thermocouples. All thermocouples were spot welded to thin skin (nominally 0.030-inch) stainless steel. The thermocouple leads were 50 feet long and all leads were fitted with plugs. The exact locations of each thermocouple are presented in Tables 4, 5, and 6, and are illustrated in Figure 2.

Fiberglass masks with thermocouple locating holes in them were provided for the Orbiter, External Tank, and left-hand SRB. These masks provided a rapid and accurate means of identifying and checking the thermocouple instrumentation.

## TEST FACILITY DESCRIPTION

The Langley Unitary Plan Wind Tunnel is under the direction of the High-Speed Aircraft Division at NASA LaRC. The tunnel is used for force, moment, pressure-distribution, and heat-transfer studies. The test medium is air. Model mounting consists of various sting arrangements with axial and lateral movement, and side-wall support. The tunnel is of the continuous-flow, asymmetric sliding-block type. There are two test sections, Nos. 1 and 2, each 4 feet square and 7 feet long. Test section No. 2 used for these tests has a Mach number range of 2.29 to 4.63. The dynamic pressure (PSF) and unit Reynolds number (per foot) range for the lower Mach number are 120 to 1260 and  $0.76 \times 10^6$  to  $5.5 \times 10^6$ , respectively. For the maximum Mach number these ranges are 95 to 905 and  $0.83 \times 10^6$  to  $7.78 \times 10^6$ , respectively. Normal operating temperature for the tunnel is 150°F, except at Mach numbers above 3.75 where it is 175°F.

## TEST PROCEDURES

Heat transfer data was obtained by measuring temperature histories of the 223 iron-constantan thermocouples on the model. Since the Unitary Plan Wind Tunnel is a continuous flow tunnel with no model injection system, it must generate a heat pulse (sustained) for approximately 10 seconds to achieve a temperature rise on the model. Temperature-time measurements are recorded during this pulse. The tunnel is then returned to normal running conditions and maintained until the model returns to equilibrium temperature, at which time the procedure is repeated.

A maximum of 198 thermocouples could be recorded at any one time. Temperature measurements were collected through the Beckman Data Acquisition system located in the control room and then routed to the Data Reduction Center where they were stored on magnetic tape for computing at a later time. A visual display of the thermocouple outputs were available for monitoring during the run.

Prior to tunnel installation, a heat response check was performed on all thermocouples and the following were found to be bad: ET-41, ET-90, SRB-28, SRB-31, SRB-44, and SRB-55. These should not be used in any data reduction.

When testing the SRB alone, at high angles of attack, the SRB was positioned so that the longitudinal row containing thermocouples 1 through 17 was facing upstream.

### TEST PROCEDURES (Concluded)

The model was leveled in pitch and roll using leveling block which attached to the top of the Orbiter. When leveling the external tank or solid rocket booster, the model external surface was used. Proper roll relationships between the Orbiter, External Tank, and Solid Rocket Booster were assured by scribe lines located on the stings of each component and the attaching brackets.

## DATA REDUCTION

Heat transfer data was computed using the following equations and procedures:

$$q_{\text{aero}} = q_{\text{stored}} + q_{\text{losses}}$$

neglecting losses the equation can be written:

$$h (T_e - T_w) = Wbc \frac{dT_w}{dt}$$

and by rearranging:

$$\frac{T_e}{T_o} \int_0^t T_o dt - \int_0^t T_w dt = \frac{wc}{h} \int_{T_{w,0}}^{T_{w,t}} dT_w$$

where  $\frac{T_e}{T_o}$  is experimentally determined.

$$\text{Thus } h = \frac{wc (T_{w,t} - T_{w,0})}{\frac{T_e}{T_o} \sum_0^t T_o \Delta t - \sum_0^t T_w \Delta t}$$

or when considering the losses due to conduction:

$$h = \frac{wc (T_{w,t} - T_{w,0}) - kb \sum_0^t \nabla^2 T_w}{\frac{T_e}{T_o} \sum_0^t T_o \Delta t - \sum_0^t T_w \Delta t}$$

$$\text{where } \nabla^2 T_w = \frac{\partial^2 T_w}{\partial X^2} + \frac{\partial^2 T_w}{\partial Y^2}$$

$$\text{and } \frac{\partial^2 T_w}{\partial X^2} = \frac{\frac{T_{n+1} - T_n}{X_{n+1} - X_n} - \frac{T_n - T_{n-1}}{X_n - X_{n-1}}}{\frac{X_{n+1} - X_{n-1}}{2}} \quad \text{and } \frac{\partial^2 T_w}{\partial Y^2} = \frac{\frac{T_{n+1} - T_n}{Y_{n+1} - Y_n} - \frac{T_n - T_{n-1}}{Y_n - Y_{n-1}}}{\frac{Y_{n+1} - Y_{n-1}}{2}}$$

### Equation for Computing Reference Stagnation Point Heating Rate

The stagnation point heating on a sphere can be determined from the following equation from Fay and Riddell:

$$\dot{q}_0 = 0.94(\rho_w \mu_w)^{0.5} \left[ \frac{\rho_{t,2} \mu_{t,2}}{\rho_w \mu_w} \right]^{0.4} (H_0 - H_w) \left[ \left( \frac{1}{r} \right)^{0.5} \left[ 2RT_0 \left( 1 - \frac{P_\infty}{P_{t2}} \right) \right]^{0.25} \right] \quad (1)$$

For the range of stagnation temperature and wall temperature of the present tests:

$$H_0 - H_w \approx C_p (T_0 - T_w) \quad (2)$$

and by definition:

$$N_{St_0} = \frac{\dot{q}_0}{P_\infty V_\infty C_p (T_0 - T_w)} \quad (3)$$

Substituting equations 2 and 3 into equation 1 and rearranging, one obtains,

$$N_{St_0} = \frac{1.118}{P_\infty V_\infty} \frac{(\mu_0)^{0.5}}{(RT_0)^{0.25}} \left( \frac{1}{r} \right)^{0.5} \left[ \frac{P_{t2}}{P_{t1}} \right]^{0.5} (P_{t1})^{0.5} \quad (4)$$

Also by definition

$$N_{St_0} = \frac{h_0}{P_\infty V_\infty C_p} \quad (5)$$

therefore

$$h_0 = 1.118 C_p \frac{(\mu_0)^{0.5}}{(RT_0)^{0.25}} \left( \frac{1}{r} \right)^{0.5} \left[ \frac{P_{t2}}{P_{t1}} \right]^{0.5} (P_{t1})^{0.5} \quad (6)$$

[illegible]



TABLE II.

TEST: IH16 (LaRC UPWT 1041)

DATA SET/RUN NUMBER COLLATION SUMMARY

DATE: JULY 9, 1973

DATA SET IDENTIFIER	CONFIGURATION	SCHD.		PARAMETERS/VALUES				NO. OF RUNS	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE)									
		$\alpha$	$\beta$	$\Delta h$	GRIT	M			2	5								
RPQ001*	ORB+ET+SRB	0	0	.175		3.7		2	3	1								
02	ORB+ET+SRB	-5		.175				2	4	2								
03	ET	0		—				2	9	7								
04	ET	-5						2	10	8								
05	SRB	0						2	15	13								
06	SRB	-5						2	16	14								
07	SRB	20						1		19								
08	SRB	45						1		20								
09	SRB	70						1		21								
10	SRB	90						1		22								
11	ORB	0						2	28	25								
12	ORB	-5		↓				2	29	27								
13	ORB+ET+SRB	0		.069				2	34	32								
14	ORB+ET+SRB	-5		.069				2	35	33								
15	ORB+ET+SRB	0		.175	#25			2	39	38								
16	ORB	0		—				2	43	42								
17	SRB	0						2	47	46								
↓ 18	ET	0	↓	↓	↓	↓		2	54	53								

17576

761

6155

4943

3731

2519

137

1H/HREF

RPQ01

RN/FT

HAW/HT

2

NDV

IDVAR (2)

IDVAR (1)

COEFFICIENTS

$\alpha$  OR  $\beta$

SCHEDULES

\* Fourth Character represents: B-Orbiter fuselage, W-Orbiter wing, C-Orbiter Windshield or canopy, T-External tank, S-SRB surface.



TABLE II. (Concluded)

[illegible]

Table III. Model Dimensional Data

Model Component: Body (B<sub>10</sub>)

General Description: Fuselage, 2A configuration lightweight orbiter,  
per Rockwell lines VL70-000089B

Model Scale = 0.00593

Drawing Number: VL70-000089B, VL70-000092, 93, 94A

Dimensions:	<u>Full-Scale</u>	<u>Model Scale</u>
Length ~ in.	<u>1328.3</u>	<u>7.87682</u>
Max width ~ in. (at X <sub>0</sub> = 1528.3)	<u>265.0</u>	<u>1.57145</u>
Max depth ~ in. (at X <sub>0</sub> = 1480.52)	<u>243.0</u>	<u>1.47064</u>
Fineness ratio	<u>5.012</u>	<u>5.012</u>
Area ~ ft <sup>2</sup>		
Max cross-sectional	<u>456.4</u>	<u>0.01605</u>
Planform	<u>                    </u>	<u>                    </u>
Wetted	<u>                    </u>	<u>                    </u>
Base	<u>                    </u>	<u>                    </u>

TABLE III. (Continued)

Model Component: Canopy (C<sub>5</sub>)

General Description: Orbiter canopy for lightweight orbiter configuration

Model Scale = 0.00593

Drawing Number: VL-70-000092

Dimensions:	<u>Full-Scale</u>	<u>Model Scale</u>
Sta fwd bulkhead ~ in.	<u>391.0</u>	<u>2.31863</u>
Sta TE ~ in.	<u>560.0</u>	<u>3.32080</u>
Canopy/body intersection ~ in.	<u>391.0</u>	<u>2.31863</u>
	<u>          </u>	<u>          </u>
	<u>          </u>	<u>          </u>
	<u>          </u>	<u>          </u>
	<u>          </u>	<u>          </u>
	<u>          </u>	<u>          </u>

TABLE III. (Continued)

Model Component: Manipulator Housing (D<sub>7</sub>)

General Description: 2A configuration per Rockwell lines VL70-000093

Model Scale = 0.00593

Drawing Number: VL70-000093, SS-A-00092

Dimensions:	Full-Scale	Model Scale
Length ~ in.	881.0	5.22433
Max width ~ in.	51.0	0.30243
Max depth ~ in.	23.0	0.13639
Fineness ratio	-	-
Area ~ ft <sup>2</sup>		
Max cross-sectional	-	-
Planform	-	-
Wetted	-	-
Base	-	-

Location at:

⊙ Fuselage

BP = 0.0

WP = 500.0 in. FS

X<sub>0</sub> 426.0 to X<sub>0</sub> 1307.0 in. FS

TABLE III. (Continued)

Model Component: Body Flap (F4)General Description: Aft body flap used on lightweight orbiter configurationModel Scale = 0.00593Drawing Number: VL-70-000094A, SS-A-00092

Dimensions:	Full-Scale	Model Scale
Length ~ in.	84.70	0.50227
Max width ~ in.	265.00	1.57145
Max depth ~ in.	-	-
Fineness ratio	-	-
Area ~ ft <sup>2</sup>		
Max cross-sectional	-	-
Planform	142.64	0.00502
Wetted	-	-
Base	38.65	0.00136

TABLE III. (Continued)

Model Component: OMS Pod (M<sub>3</sub>)

General Description: 2A lightweight orbiter configuration per Rockwell  
lines VL70-000094A

Drawing Number: VL70-000094A, SS-A-00092

Dimensions:	Full-Scale	Model Scale
Length ~ in.	<u>346.0</u>	<u>2.95178</u>
Max width ~ in. at X <sub>O</sub> 1450.0	<u>108.0</u>	<u>0.64044</u>
Max depth ~ in. at X <sub>O</sub> 1500.0	<u>113.8</u>	<u>0.67483</u>
Fineness ratio	<u>-</u>	<u>-</u>
Area ~ ft <sup>2</sup>		
Max cross-sectional	<u>-</u>	<u>-</u>
Planform	<u>-</u>	<u>-</u>
Wetted	<u>-</u>	<u>-</u>
Base	<u>-</u>	<u>-</u>

℄ of OMS pod

Z<sub>O</sub> = 463.9 in. FS: WP 400 + 63.9 = 463.9 in. FS

Y<sub>O</sub> = 80.0 in FS

Length: X<sub>O</sub>1214.0 to X<sub>O</sub>1560.0 = 346.0 in. FS

TABLE III. (Continued)

Model Component: Booster Solid Rocket Motor (S<sub>6</sub>)General Description: Booster solid rocket motor, lightweight orbiter  
configuration, body of revolution, data for 1 of 2 sides

Model Scale = 0.00593

Drawing Number: VL-72-000061C, VL-77-000012B, SS-A-00094

Dimensions:	Full-Scale	Model Scale
Length (includes nozzle), in.	1741.0	10.32413
Max width (tank dia), in.	142.0	0.84206
Max depth (aft shroud), in.	259.0	1.53587
Fineness ratio	6.722	6.722
Area - ft <sup>2</sup>		
Max cross-sectional	365.87	0.01287
Planform	-	-
Wetted	-	-
Base	-	-
WP of BSRM centerline, (Z <sub>T</sub> ), in.	400.0	2.3720
FS of BSRM nose (X <sub>T</sub> ), in.	743.0	4.40599



TABLE III. (Continued)

Model Component: External Tank (T8)General Description: External oxygen-hydrogen tank lightweight orbiter configuration to which the orbiter and the two solid rocket motors attachModel Scale = 0.00593Drawing Number: VL-70-000061C, VL-78-000018, SS-A-00093

Dimensions:	Full-Scale	Model Scale
Length ~ in. (nose at $X_T = 185.0$ )	1989.0	11.79477
Max width (dia), in.	324.0	1.92132
Max depth ~ in.	-	-
Fineness ratio	6.1389	6.1389
Area ~ ft <sup>2</sup>		
Max cross-sectional	572.56	0.02013
Planform	-	-
Wetted	-	-
Base	-	-
WP of tank centerline, (Z <sub>T</sub> ) in.	400.0	2.3720

TABLE III. (Continued)

Model Component: Vertical (V5)--Lightweight Orbiter ConfigurationGeneral Description: Centerline vertical tail, double-wedge airfoil with rounded leading edge

Model Scale = 0.00593

Drawing Number: VL-70-000095, SS-A-00092

## Dimensions:

	<u>Full-Scale</u>	<u>Model Scale</u>
<b>Total Data</b>		
Planform area (theo) ~ ft <sup>2</sup>	<u>413.25</u>	<u>0.01453</u>
Span (theo) ~ in.	<u>315.72</u>	<u>1.87222</u>
Aspect ratio	<u>1.675</u>	<u>1.675</u>
Rate of taper	<u>0.507</u>	<u>.507</u>
Taper ratio	<u>0.404</u>	<u>.404</u>
Sweepback angles ~ deg		
Leading edge	<u>45.000</u>	<u>45.000</u>
Trailing edge	<u>26.249</u>	<u>26.249</u>
0.25 element line	<u>41.130</u>	<u>41.130</u>
Chords ~ in.		
Root (theo) WP	<u>268.50</u>	<u>1.59220</u>
Tip (theo) WP	<u>108.47</u>	<u>0.62323</u>
MAC	<u>199.81</u>	<u>1.18487</u>
Fus sta of 0.25 MAC	<u>1463.50</u>	<u>8.67856</u>
WP of 0.25 MAC	<u>635.52</u>	<u>3.76863</u>
BL of 0.25 MAC	<u>0.0</u>	<u>0.0</u>
Airfoil section		
Leading edge angle ~ deg	<u>10.00</u>	<u>10.00</u>
Trailing edge angle ~ deg	<u>14.92</u>	<u>14.92</u>
Leading edge radius ~ in.	<u>2.00</u>	<u>0.01186</u>
Void area ~ ft <sup>2</sup>	<u>13.17</u>	<u>0.00046</u>
Blanketed area ~ ft <sup>2</sup>	<u>12.67</u>	<u>0.00045</u>

TABLE III. (Concluded)

MODEL COMPONENT: WING - W87-- LIGHTWEIGHT ORBITERGENERAL DESCRIPTION: Orbiter configuration per Rockwell Lines VL70-000093

NOTE: Dihedral angle is defined at the lower surface of the wing at the 75.33-percent element line projected into a plane perpendicular to the FRL.

MODEL SCALE: 0.00593

DRAWING NO. VL70-000093

## DIMENSIONS:

FULL SCALEMODEL SCALE

## TOTAL DATA

Planform area (theo) - ft <sup>2</sup>	2690.0	0.09459
Span (theo) - in.	936.682	5.55452
Aspect ratio	2.265	2.265
Rate of taper	1.177	1.177
Taper ratio	0.200	0.200
Dihedral angle - deg.	3.500	3.500
Incidence angle - deg.	3.000	3.000
Aerodynamic twist - deg.	+ 3.000	+ 3.000
Sweep-back angles - deg.		
Leading edge	45.000	45.000
Trailing edge	- 10.24	- 10.24
0.25 element line	35.209	35.209
Chords - in.		
Root (theo) at BP 0.0	689.24	4.08919
Tip (theo) at BP	137.85	0.81745
M.A.C.	474.81	2.81562
Fus. sta. of 0.25 MAC	1136.89	6.74176
WP of 0.25 MAC	299.20	1.77426
BL of 0.25 MAC	182.13	1.08003
Exposed data		
Area (theo) - ft <sup>2</sup>	1752.29	0.06162
Span (theo) - in. (BP 108.0 to tip)	720.68	4.27363
Aspect ratio	2.058	2.058
Taper ratio	0.2451	0.2451
Chords - In.		
Root at BP 108.0	562.40	3.33503
Tip at 1.00 b/2	137.85	0.81745
MAC	393.03	2.33067
Fus. sta of 0.25 MAC	1185.31	7.02889
WP of 0.25 MAC	300.20	1.78019
BL of 0.25 MAC	143.76	0.85250
Airfoil section (Rockwell mod NASA XXXX-64)		
t/c at root b/2 = 0.425	0.10	0.10
t/c at tip b/2 = 1.00	0.12	0.12

## DATA FOR 1 OF 2 SIDES

Leading edge cuff		
Planform area - ft <sup>2</sup>	120.33	0.00423
Leading edge intersects fus at sta - in.	560.0	3.32080
Leading edge intersects wing at sta - in.	1035.0	6.13755



TABLE IV.

## Orbiter Thermocouple Locations

T/C No.	Skin Thick.	* Location		Remarks	T/C No.	Skin Thick.	* Location		Remarks
		$y - b/2$	$x/l - x/c$				$y - b/2$	$x/l - x/c$	
1	.033	$Y = .047$	.1536	Windshield	31	.0315	$Y = .415$	1.00	Fuselage
2	.031	$Y = .047$	.1612		32	.0315	$b/2 = .40$	.225	Wing
3	.034	$Y = .047$	.1694		33	.033		.250	
4	.0375	$Y = .213$	.1588		34	.0312		.300	
5	.0375	$Y = .196$	.1657		35	.033		.400	
6	.0335	$Y = .178$	.1724		36	.0335		.500	
7	.033	$Y = 0$	.0875	Fuselage	37	.032		.600	
8	.032		.100		38	.0315		.700	
9	.031		.125		39	.0315		.800	
10	.0305		.150		40	.0310		.900	
11	.030		.175		41	.034	$b/2 = .60$	.175	
12	.031		.200		42	.032		.200	
13	.0295		.250		43	.031		.300	
14	.0295		.300		44	.033		.400	
15	.0295		.400		45	.032		.500	
16	.0302		.500		46	.032		.600	
17	.0312		.600		47	.0325		.700	
18	.0315		.700		48	.031		.800	
19	.031		.800		49	.0315		.875	
20	.0295		.900		50	.035	$b/2 = .80$	.250	
21	.030		1.00		51	.033		.300	
22	.0305		1.025		52	.033		.400	
23	.0285	$Y = .415$	.350		53	.0315		.500	
24	.0285		.375		54	.032		.600	
25	.0315		.400		55	.032		.700	
26	.0325		.500		56	.0335		.800	
27	.0320		.600		57	.033		.850	
28	.0315		.700						
29	.0325		.800						
30	.0315		.900						

\* model scale, in.

 $x/l = (t/c's 1 - 31)$  $x/c = (t/c's 32 - 57)$

TABLE V.

## External Tank Thermocouple Locations

T/C No.	Skin Thick.	Location		T/C No.	Skin Thick.	Location		T/C No.	Skin Thick.	Location	
		$\times/1$	$\phi \sim \text{deg.}$			$\times/1$	$\phi \sim \text{deg.}$			$\times/1$	$\phi \sim \text{deg.}$
1	.037	0	Nose	34	.032	.40	135	67	.030	.60	45
2	.030	.005	180	35	.033	.40	112.5	68	.030	.60	0
3	.030	.01		36	.033	.40	90	69	.033	.625	180
4	.030	.02		37	.030	.40	67.5	70	.033	.65	180
5	.030	.04		38	.029	.40	45	71	.032	.65	157.5
6	.030	.06		39	.031	.40	0	72	.031	.65	135
7	.029	.08		40	.032	.425	180	73	.030	.65	112.5
8	.029	.10		41	.032	.45	180	74	.030	.65	90
9	.028	.125		42	.033	.45	157.5	75	.030	.65	67.5
10	.028	.15		43	.031	.45	135	76	.033	.675	180
11	.028	.175		44	.031	.45	112.5	77	.033	.70	180
12	.028	.20		45	.031	.45	0	78	.032	.70	157.5
13	.028	.20	90	46	.033	.475	180	79	.032	.70	135
14	.032	.25	180	47	.033	.50	180	80	.031	.70	112.5
15	.029	.25	90	48	.033	.50	157.5	81	.030	.70	90
16	.030	.275	112.5	49	.032	.50	135	82	.031	.70	67.5
17	.030	.275	90	50	.033	.50	112.5	83	.029	.70	45
18	.034	.30	180	51	.031	.50	90	84	.033	.75	180
19	.031	.30	112.5	52	.031	.50	67.5	85	.033	.75	157.5
20	.031	.30	90	53	.030	.50	45	86	.032	.75	135
21	.030	.30	67.5	54	.032	.525	180	87	.031	.75	112.5
22	.031	.325	135	55	.032	.55	180	88	.031	.75	90
23	.031	.325	112.5	56	.033	.55	157.5	89	.030	.75	67.5
24	.031	.325	90	57	.031	.55	135	90	.033	.80	180
25	.032	.35	180	58	.031	.55	112.5	91	.033	.80	157.5
26	.032	.35	135	59	.031	.55	90	92	.032	.80	135
27	.031	.35	112.5	60	.032	.575	180	93	.032	.80	112.5
28	.031	.35	90	61	.032	.60	180	94	.031	.80	90
29	.031	.35	67.5	62	.033	.60	157.5	95	.030	.80	67.5
30	.034	.375	180	63	.031	.60	135	96	.029	.80	45
31	.032	.375	135	64	.031	.60	112.5	97	.030	.80	0
32	.033	.40	180	65	.031	.60	90	98	.033	.85	180
33	.032	.40	157.5	66	.031	.60	67.5	99	.032	.85	157.5

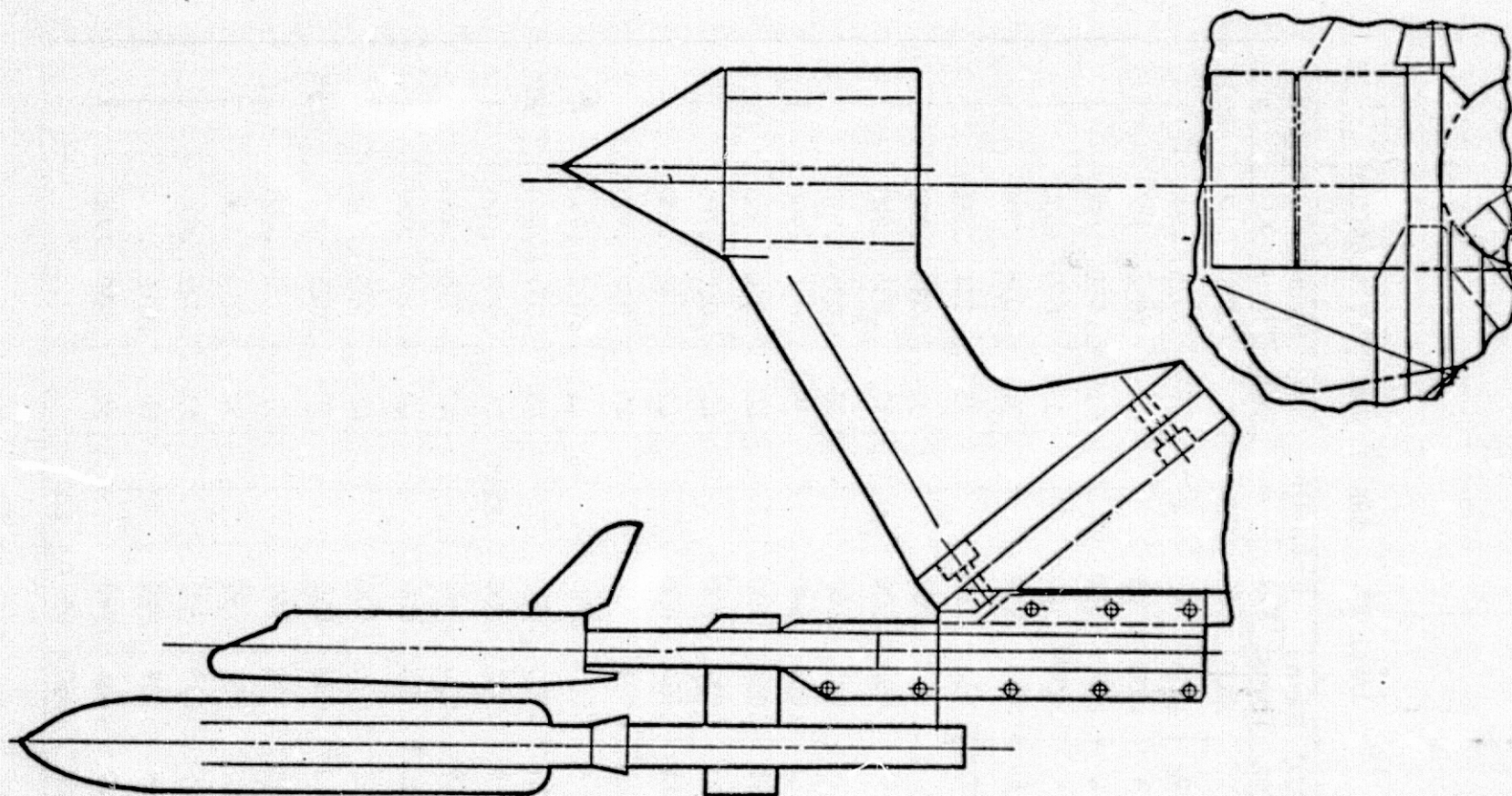
TABLE V. - (Concluded)

T/C No.	Skin Thick	Location	
		$\alpha/\lambda$	$\phi \sim \text{deg.}$
100	.032	.85	135
101	.030	.85	112.5
102	.030	.85	90
103	.033	.90	180
104	.033	.90	157.5
105	.032	.90	135
106	.032	.90	112.5
107	.031	.90	90
108	.030	.90	67.5
109	.029	.90	45
110	.033	.935	180
111	.033	.974	180



TABLE VI. - SRB THERMOCOUPLE LOCATIONS

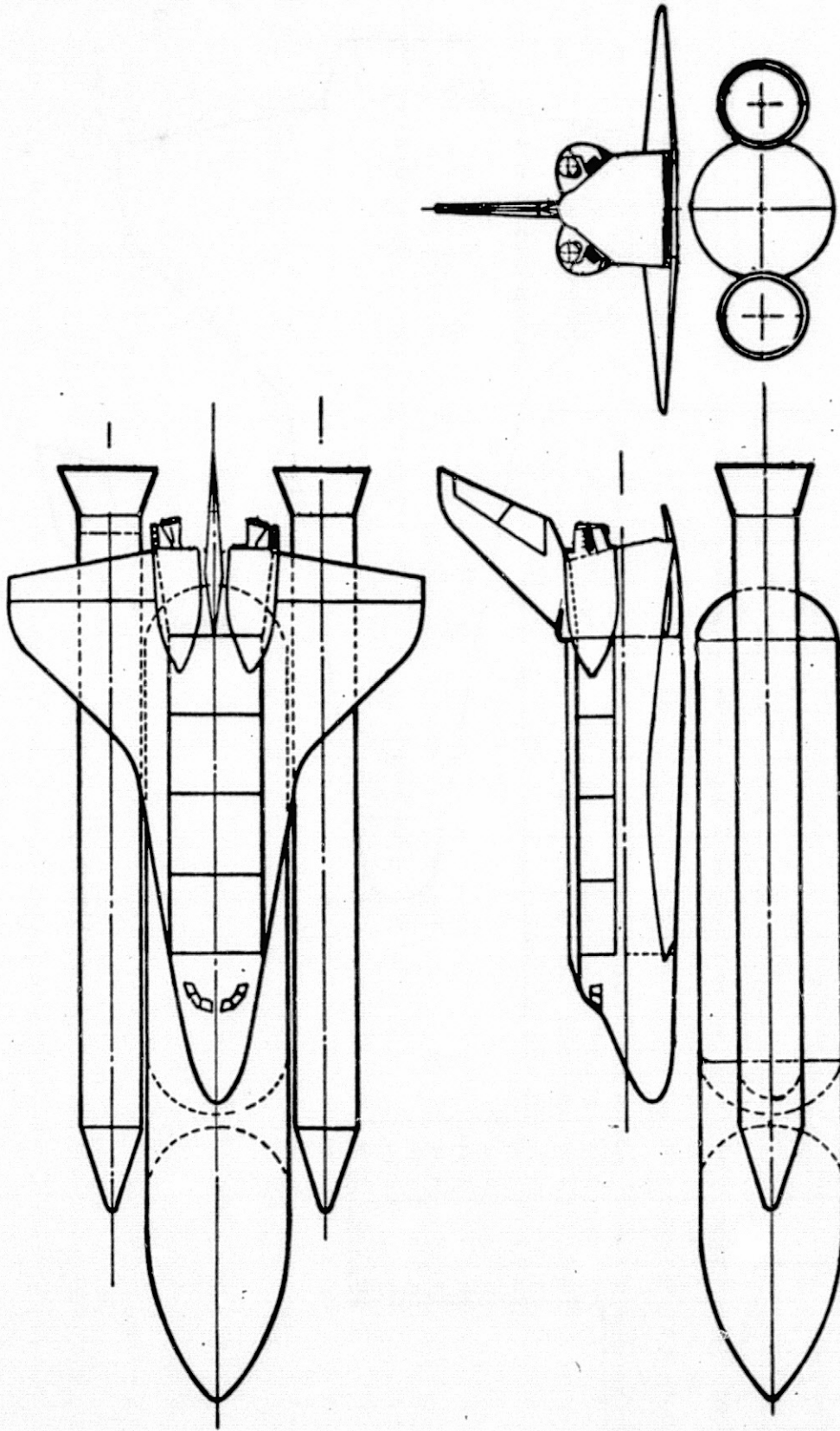
T/C No.	Skin Thick	Location		T/C No.	Skin Thick	Location	
		X/L	$\phi$			X/L	$\phi$
1	.040	0	0	29	.030	.100	180°
2	.035	0	270°	30	.035	.200	
3	.033	.025		31	.034	.400	
4	.030	.050		32	.034	.600	
5	.030	.100		33	.033	.650	
6	.035	.112		34	.033	.700	
7	.032	.150		35	.034	.750	
8	.036	.200		36	.035	.800	
9	.034	.300		37	.035	.920	
10	.033	.400		38	.035	.950	
11	.035	.500		39	.034	.996	
12	.022	.600		40	.040	.700	135°
13	.033	.700		41	.040	.750	
14	.034	.800		42	.038	.800	
15	.035	.920		43	.030	.920	
16	.035	.950		44	.034	.996	
17	.035	.990		45	.032	.400	90°
18	.034	.200	225°	46	.038	.700	
19	.034	.300		47	.038	.800	
20	.035	.400		48	.030	.920	
21	.030	.600		49	.030	.996	
22	.033	.650		50	.025	.200	315°
23	.032	.700		51	.028	.400	
24	.032	.750		52	.030	.600	
25	.033	.800		53	.029	.800	
26	.033	.920		54	.032	.920	
27	.034	.996		55	.032	.996	
28	.030	.05	180°				



a. Typical Model Installation

Figure 1. Model General Arrangement



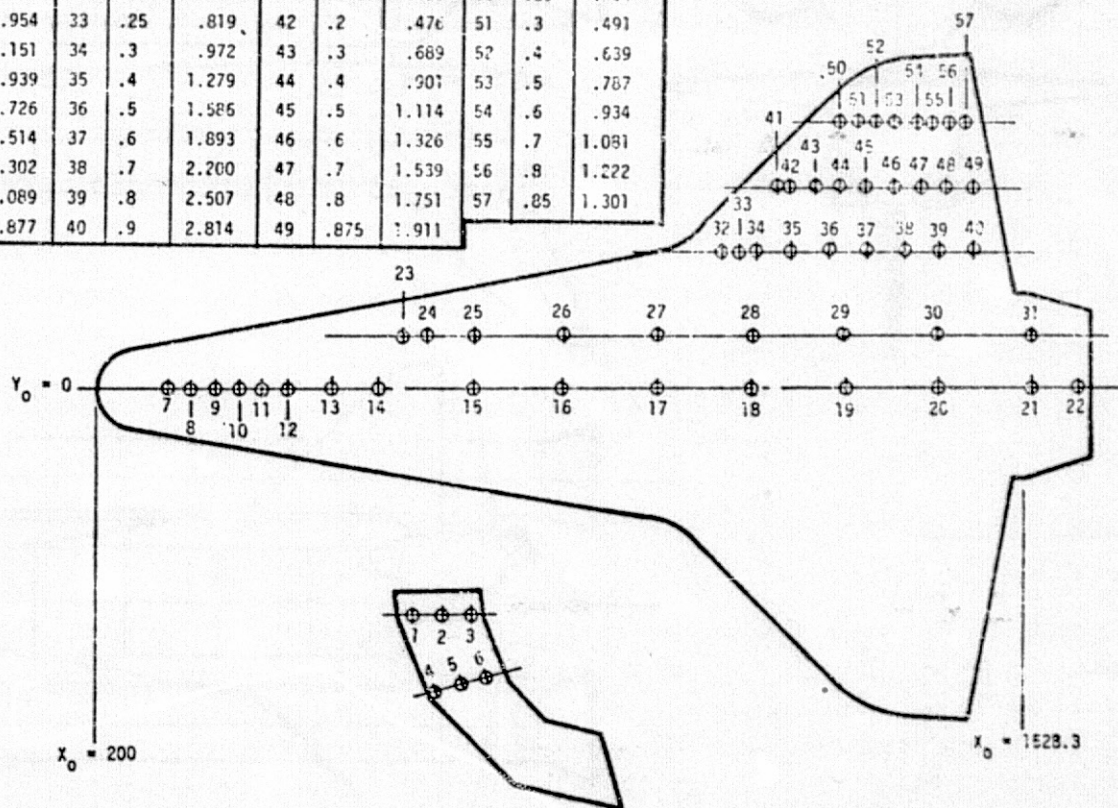


b. Integrated Vehicle General Arrangement

Figure 1. (Concluded)

## THERMOCOUPLE LOCATIONS

WINDSHIELD			$Y_0 = 0$			BP 70			.4 b/2			.6 b/2			.8 b/2		
						$Y = .415$			$Y = 1.111$			$Y = 1.667$			$Y = 2.222$		
NO.	DIST. FROM $X_0 = 200$	Y	NO.	X/L	DIST. FROM $X_0 = 200$	NO.	X/L	DIST. FROM $X_0 = 200$	X/C	DIST. FROM L.E.	NO.	X/C	DIST. FROM L.E.	NO.	X/C	DIST. FROM L.E.	
1	1.210	.047	7	.0875	.689	23	.35	2.757	32	.225	41	.175	.423	50	.25	.419	
2	1.272	.047	8	.100	.788	24	.375	2.954	33	.25	42	.2	.476	51	.3	.491	
3	1.334	.047	9	.125	.985	25	.4	3.151	34	.3	43	.3	.689	52	.4	.639	
4	1.251	.213	10	.150	1.182	26	.5	3.939	35	.4	44	.4	.901	53	.5	.787	
5	1.305	.196	11	.175	1.378	27	.6	4.726	36	.5	45	.5	1.114	54	.6	.934	
6	1.358	.178	12	.20	1.595	28	.7	5.514	37	.6	46	.6	1.326	55	.7	1.081	
			13	.25	1.969	29	.8	6.302	38	.7	47	.7	1.539	56	.8	1.222	
			14	.3	2.363	30	.9	7.089	39	.8	48	.8	1.751	57	.85	1.301	
			15	.4	3.151	31	1.0	7.877	40	.9	49	.875	1.911				
			16	.5	3.939												
			17	.6	4.726												
			18	.7	5.514												
			19	.8	6.302												
			20	.9	7.089												
			21	1.0	7.877												
			22	1.025	8.074												



ORIGINAL PAGE IS  
OF POOR QUALITY

a. 41-OTS 0.006-Scale Orbiter T/C Locations

Figure 2. Instrumentation Locations



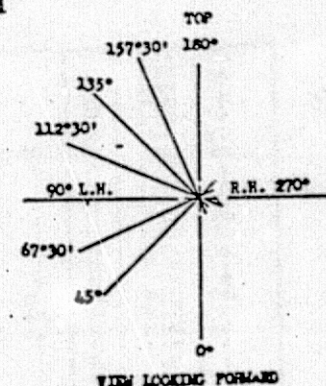
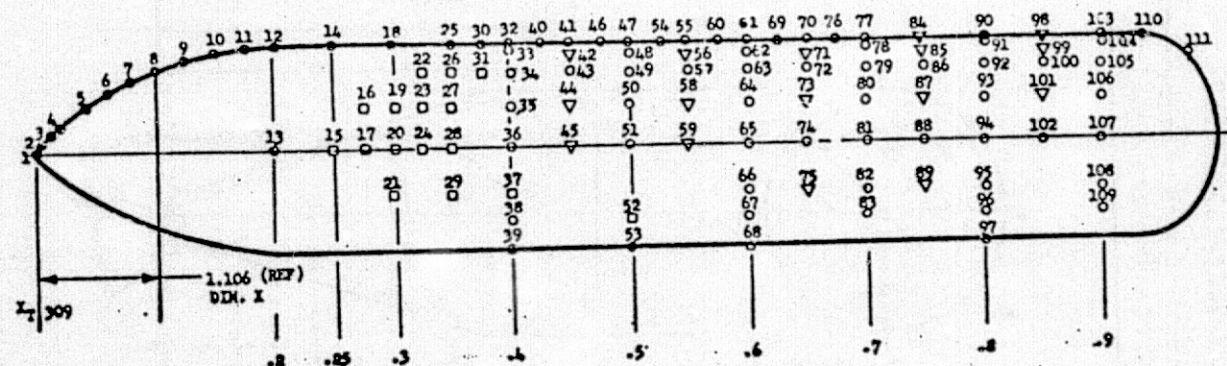
T/C NO.	DIM. X	$\phi$
1	0	180°
2	.055	180°
3	.111	
4	.221	
5	.442	
6	.664	
7	.885	
8	1.105	
9	1.382	
10	1.659	
11	1.935	
12	2.212	180°
13	2.212	90°
14	2.765	180°
15	2.765	90°
16	3.041	112°30'
17	3.041	90°
18	3.318	180°
19		112°30'
20		90°
21	3.318	67°30'
22	3.594	135°
23	3.594	112°30'
24	3.594	90°
25	3.871	180°

T/C NO.	DIM. X	$\phi$
26	3.871	135°
27		112°30'
28		90°
29	3.871	67°30'
30	4.147	180°
31	4.147	135°
32	4.424	180°
33		157°30'
34		135°
35		112°30'
36		90°
37		67°30'
38		45°
39	4.424	0°
40	4.700	180°
41	4.977	180°
42		157°30'
43		135°
44		112°30'
45	4.977	90°
46	5.253	180°
47	5.530	180°
48		157°30'
49		135°
50	5.530	112°30'

T/C NO.	DIM. X	$\phi$
51	5.530	90°
52	5.530	67°30'
53	5.530	45°
54	5.806	180°
55	6.082	180°
56		157°30'
57		135°
58		112°30'
59	6.082	90°
60	6.359	180°
61	6.635	180°
62		157°30'
63		135°
64		112°30'
65		90°
66		67°30'
67		45°
68	6.635	0°
69	6.912	180°
70	7.188	180°
71		157°30'
72		135°
73		112°30'
74		90°
75	7.188	67°30'

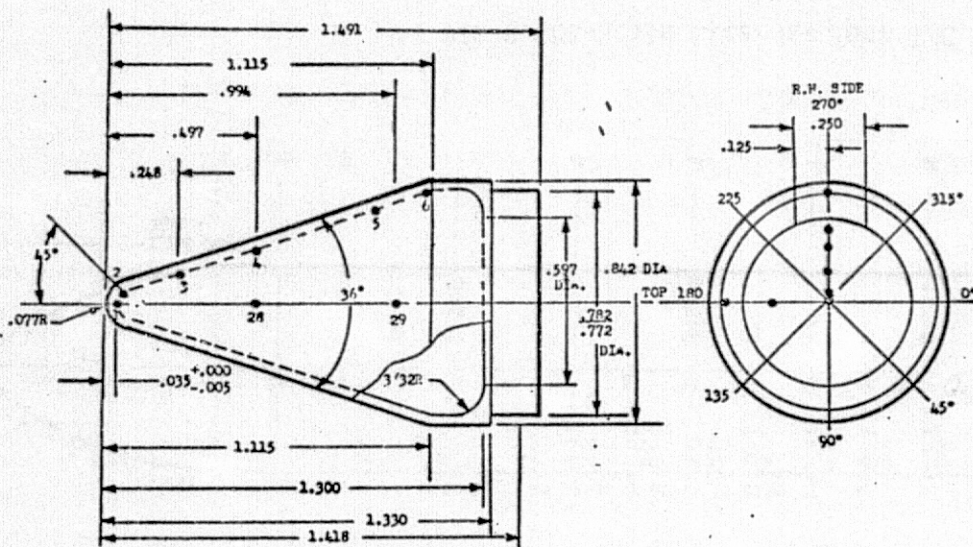
T/C NO.	DIM. X	$\phi$
76	7.465	180°
77	7.741	180°
78		157°30'
79		135°
80		112°30'
81		90°
82		67°30'
83	7.741	45°
84	8.294	180°
85		157°30'
86		135°
87		112°30'
88		90°
89	8.294	67°30'
90	8.847	180°
91		157°30'
92		135°
93		112°30'
94		90°
95		67°30'
96		45°
97	8.847	0°
98	9.400	180°
99	9.400	157°30'
100	9.400	135°

T/C NO.	DIM. X	$\phi$
101	9.400	112°30'
102	9.400	90°
103	9.953	180°
104		157°30'
105		135°
106		112°30'
107		90°
108		67°30'
109	9.953	45°
110	10.336	180°



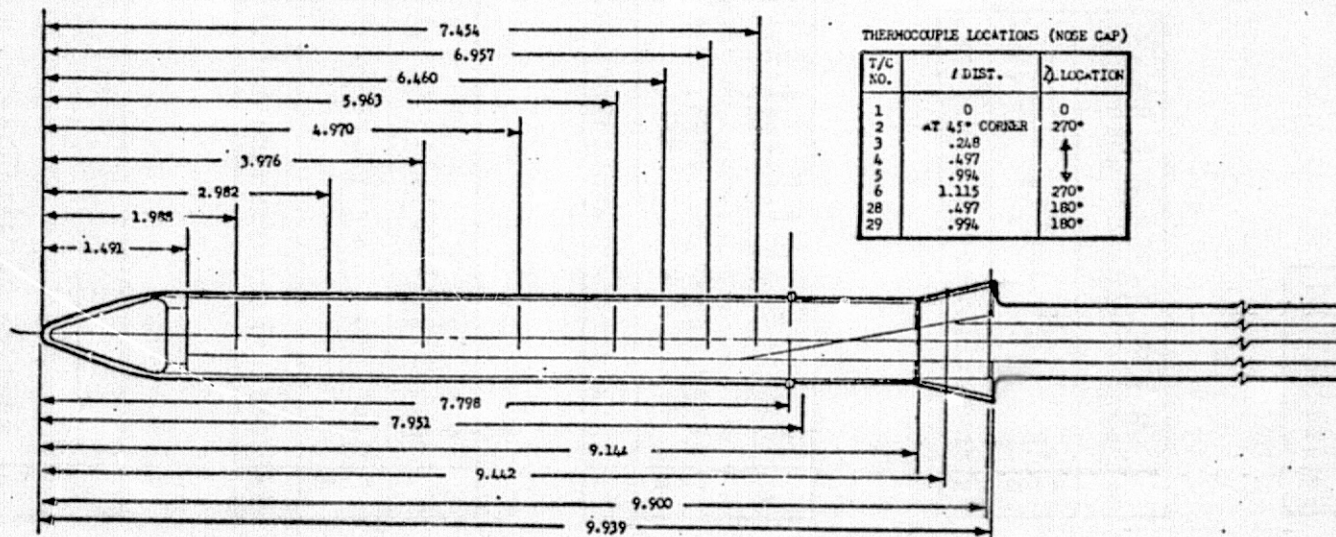
b. 41-OTS 0.006-Scale External Tank T/C Locations  
Figure 2. (Continued)





THERMOCOUPLE LOCATIONS (BODY)

T/C NO.	I DIST.	LOCATION	T/C NO.	I DIST.	LOCATION
7	1.491	270°	30	1.988	180°
8	1.988	↑	31	3.976	↑
9	2.982	↑	32	5.963	↑
10	3.976	↑	33	6.460	↑
11	4.970	↑	34	6.957	↑
12	5.963	↑	35	7.454	↑
13	6.957	↑	36	7.951	↑
14	7.951	↑	37	9.144	↑
15	9.144	↑	38	9.442	↑
16	9.442	↑	39	9.900	180°
17	9.900	270°	40	6.957	135°
18	1.988	↑	41	7.454	↑
19	2.982	↑	42	7.951	↑
20	3.976	↑	43	9.144	↑
21	5.963	↑	44	9.900	135°
22	6.460	↑	45	3.976	90°
24	6.957	↑	46	6.957	↑
25	7.454	↑	47	7.951	↑
26	7.951	↑	48	9.144	↑
27	9.144	225°	49	9.900	90°
			50	1.988	315°
			51	3.976	↑
			52	5.963	↑
			53	7.951	↑
			54	9.144	↑
			55	9.900	315°

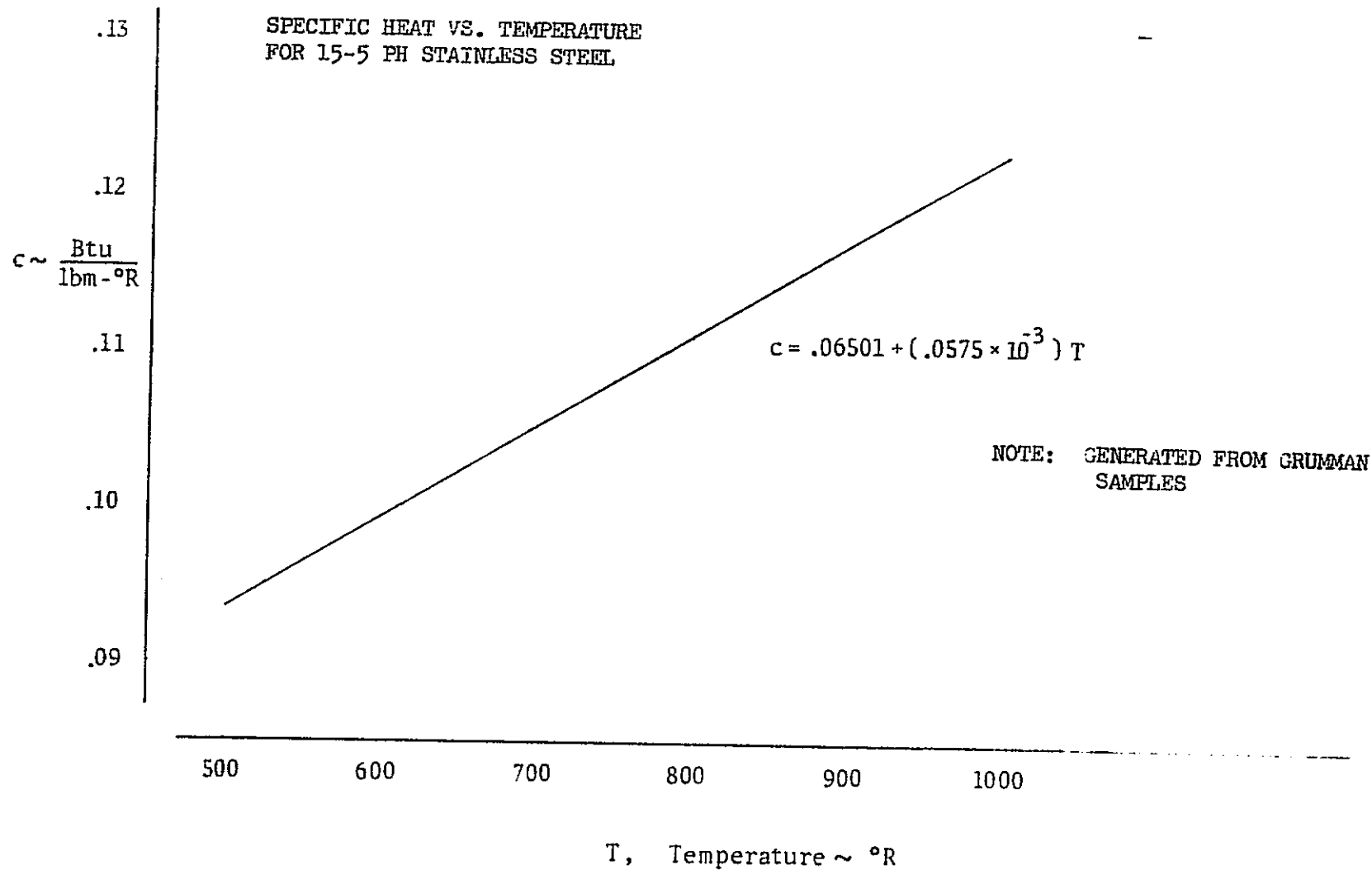


THERMOCOUPLE LOCATIONS (NOSE CAP)

T/C NO.	I DIST.	LOCATION
1	0	0
2	AT 45° CORNER	270°
3	.248	↑
4	.497	↑
5	.994	↑
6	1.115	270°
28	.497	180°
29	.994	180°

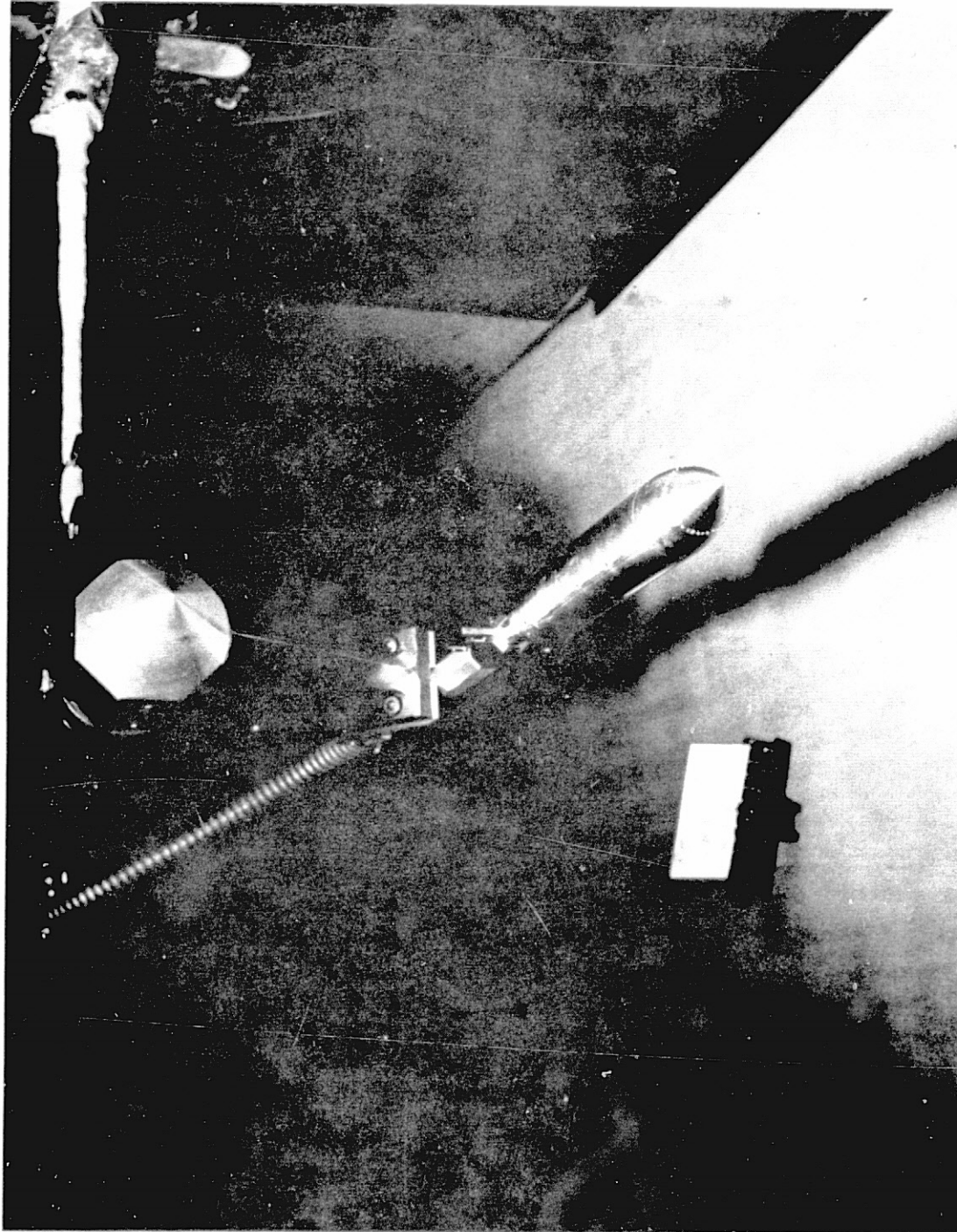
c. 41-OTS 0.006-Scale BSRM (Left-Hand) T/C Locations

Figure 2. (Continued)

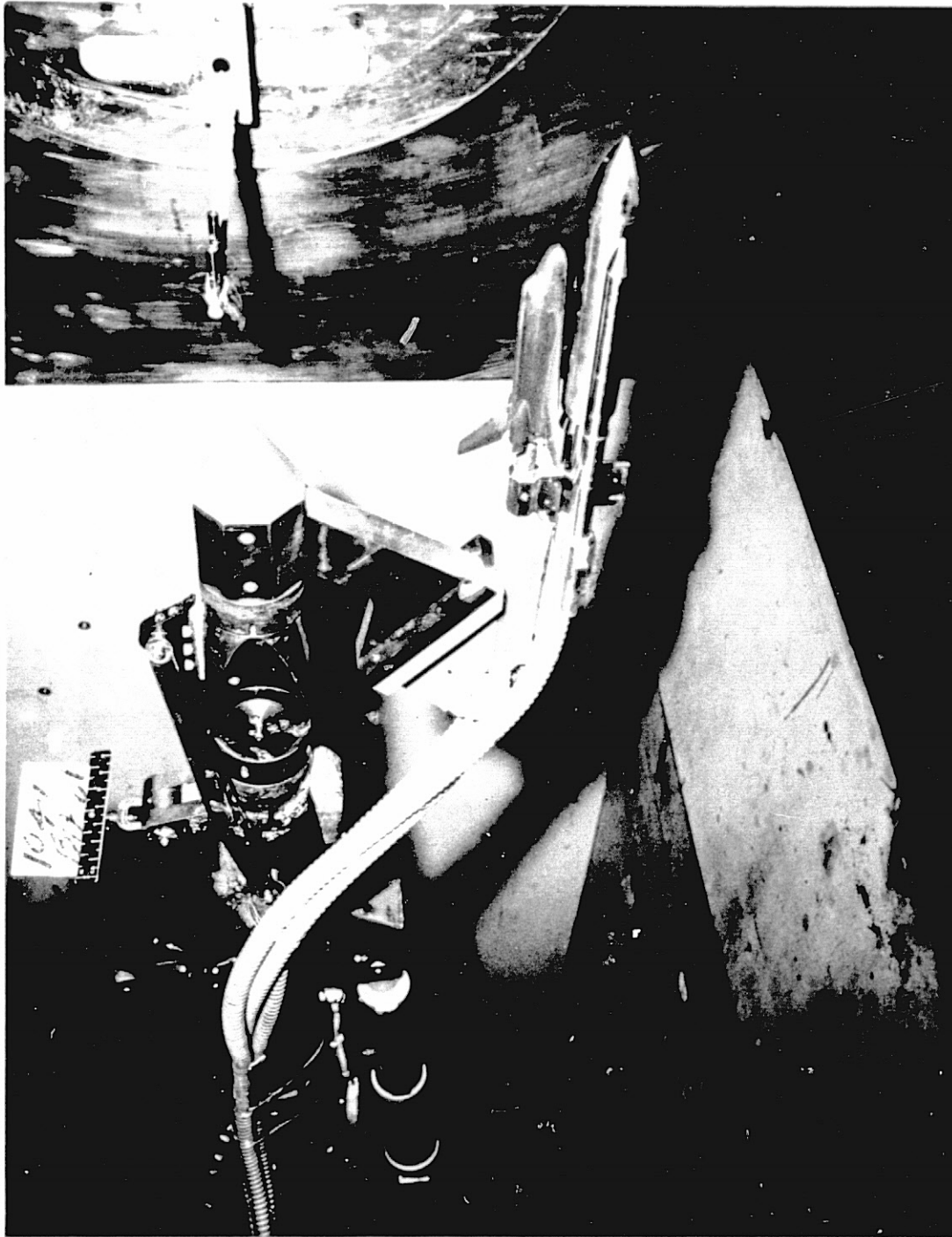


d. Model Material Specific Heat Variation With Temperature

Figure 2. (Concluded)



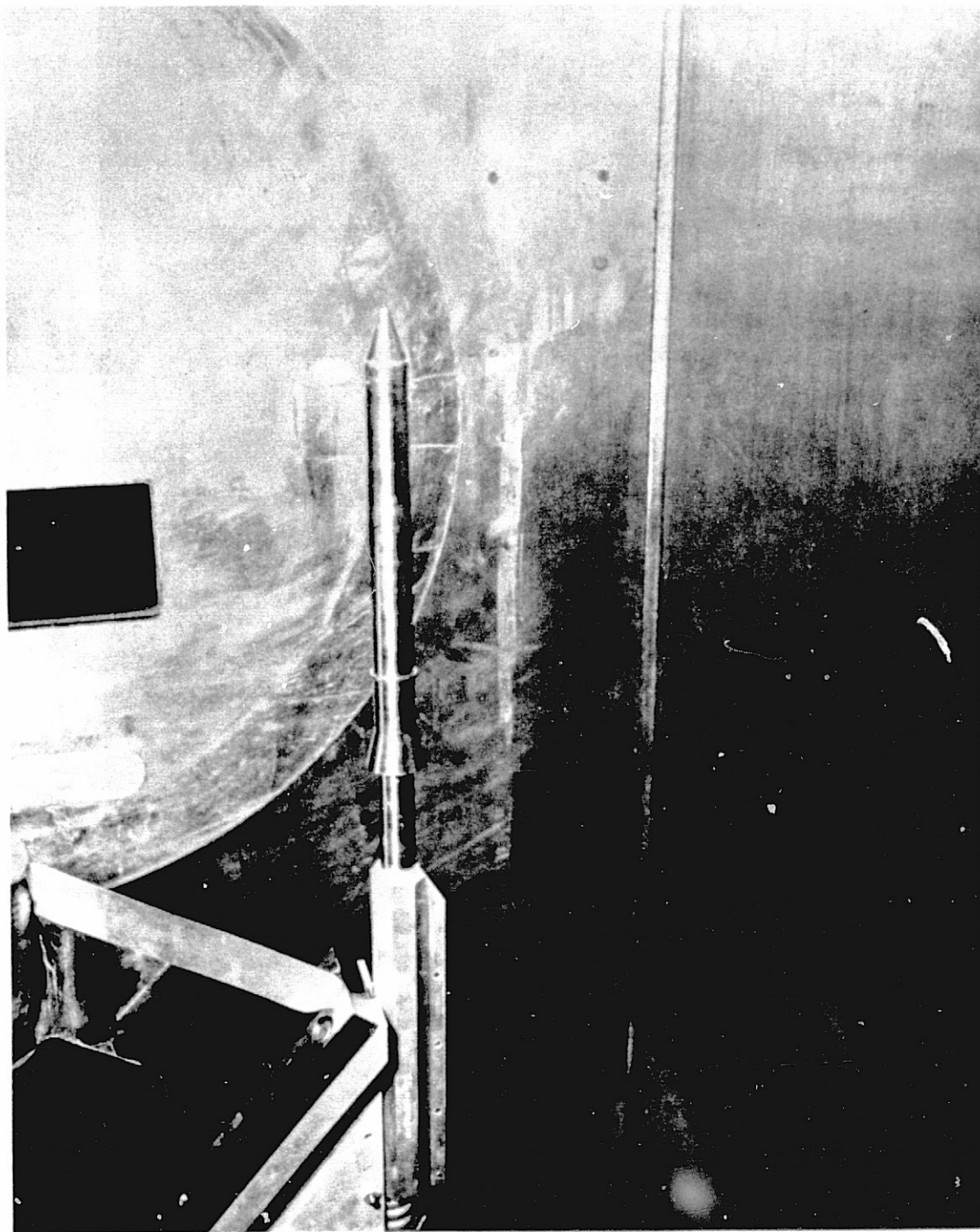
a. Typical Installation - ET Alone With Grit,  $\alpha = 0^\circ$   
Figure 3. Model Photographs



b. Typical Installation - Integrated Configuration,  $\alpha = 0^\circ$

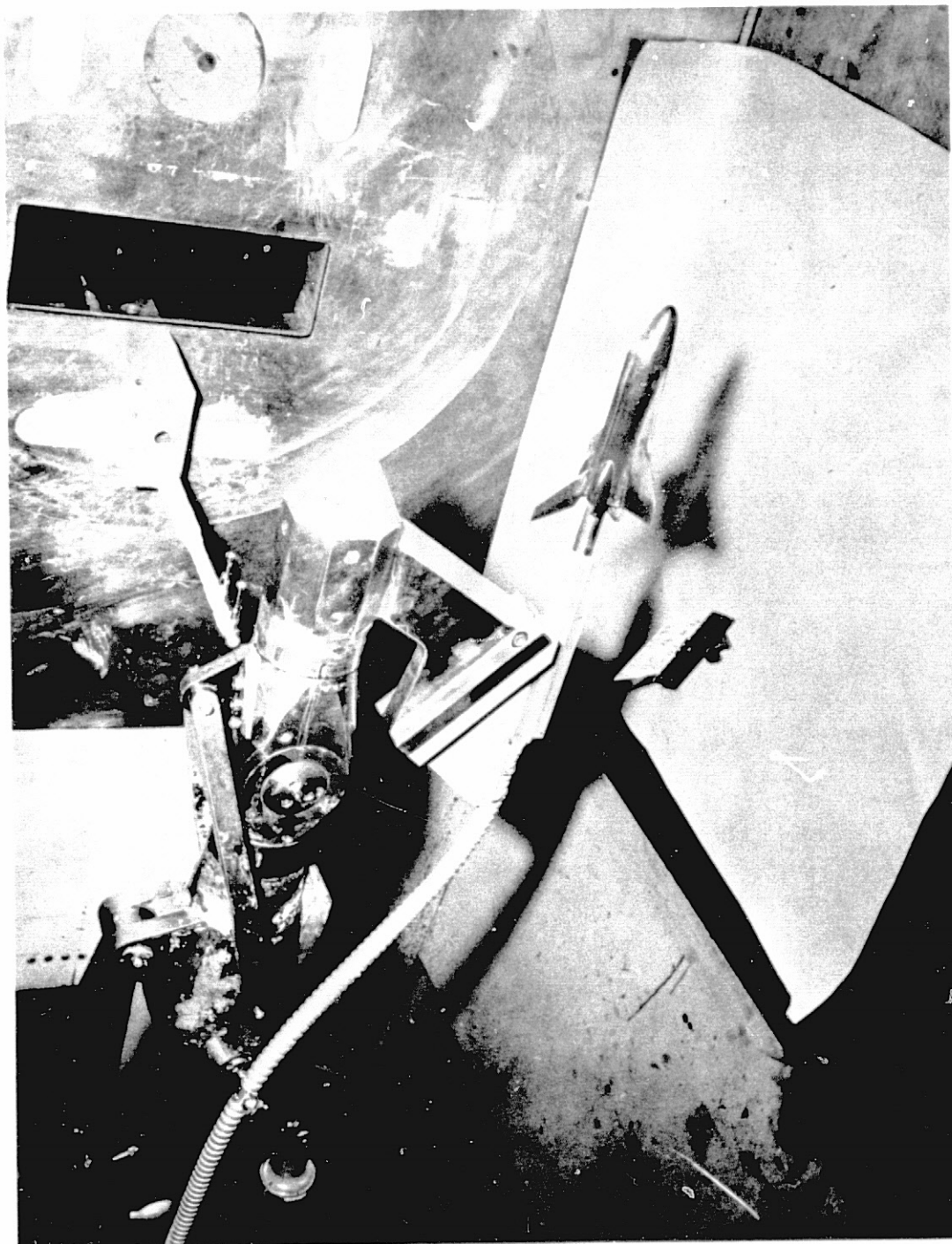
Figure 3. (Continued)





c. Typical Installation - SRB Alone,  $\alpha = 0^\circ$   
Figure 3. (Continued)





d. Typical Installation - Orbiter Alone,  $\alpha = 0^\circ$

Figure 3. (Continued)



e. Typical Installation SRB Alone,  $\alpha = 90^\circ$

Figure 3. (Concluded)

## DATA FIGURES

Plotted data tabulations are available from  
DMS on request.

# IH16 089B + T8 + S6 ORBITER FUSELAGE SURFACE (RPQB01)

SYMBOL Y(BP) HAW/HT RN/L  
 O .000 .900 1.930  
 □ 70.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000 DELTAH .175

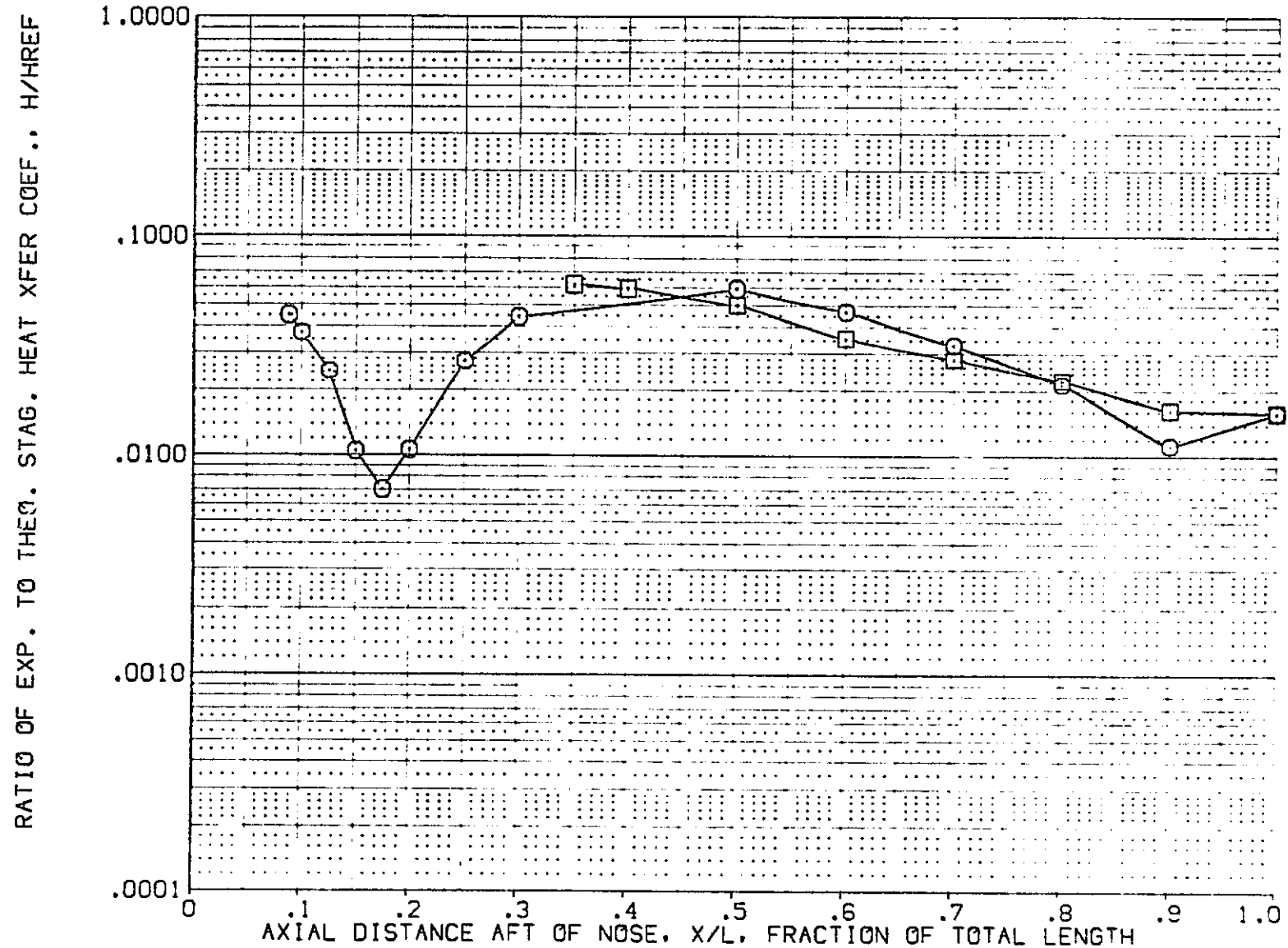
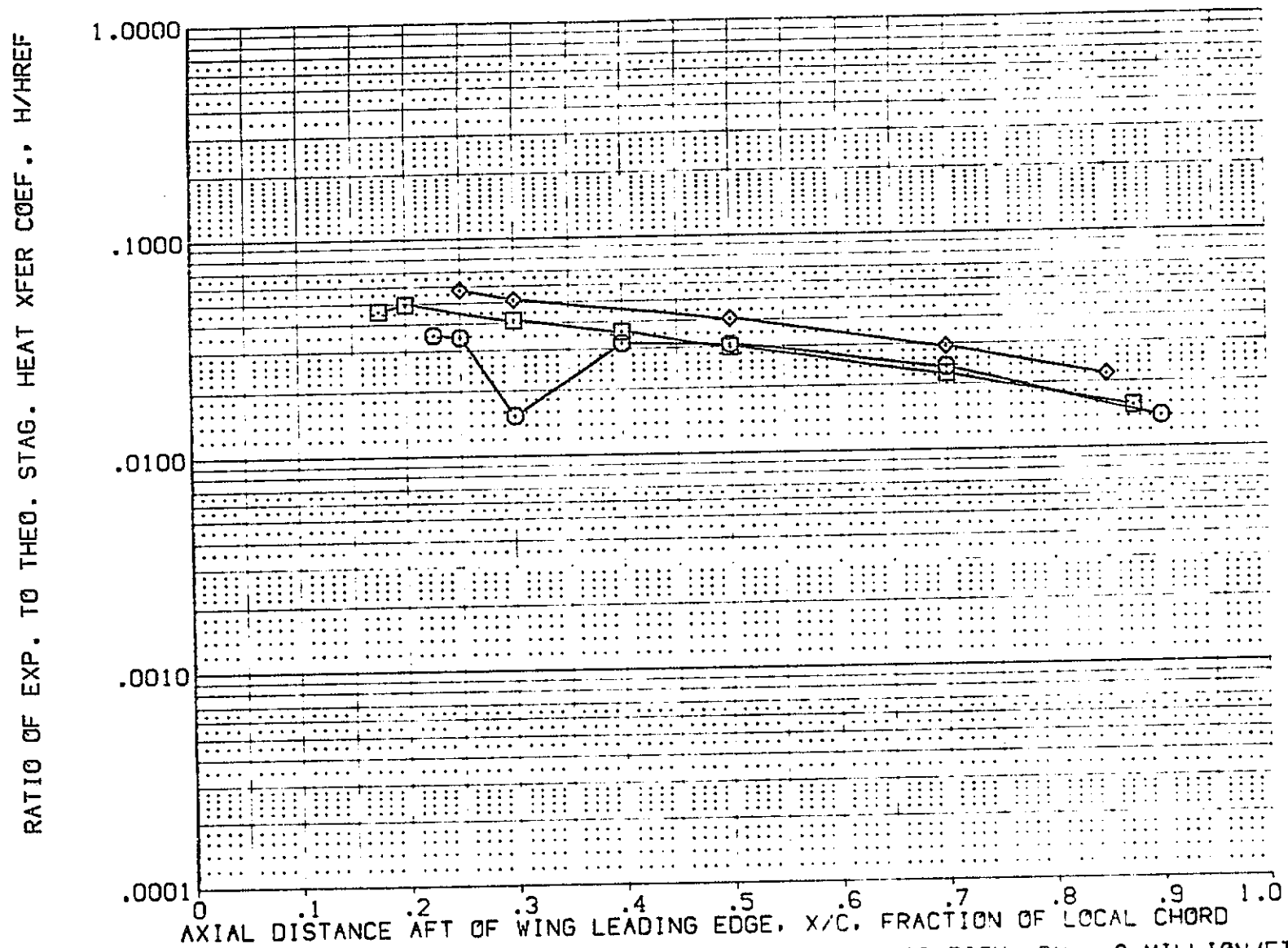


FIG. 4 INTEGRATED VEHICLE - ORBITER SURFACE Y VARIATION RN = 2 MILLION/FT.

SYMBOL	2Y/B	HAW/HT	RN/L
○	.400	.900	1.930
□	.600		
◇	.800		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

FIG. 4 INTEGRATED VEHICLE - ORBITER SURFACE Y VARIATION  $RN = 2$  MILLION/FT.





# IH16 089B + T8 + S6 ORBITER FUSELAGE SURFACE (RPQB02)

SYMBOL    Y(BP)    HAV/HT    RN/L  
○        .000        .900        1.990  
□        70.000

PARAMETRIC VALUES  
MACH        3.700    ALPHA       -5.000  
BETA        .000        DELTA       .175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $H/H_{REF}$

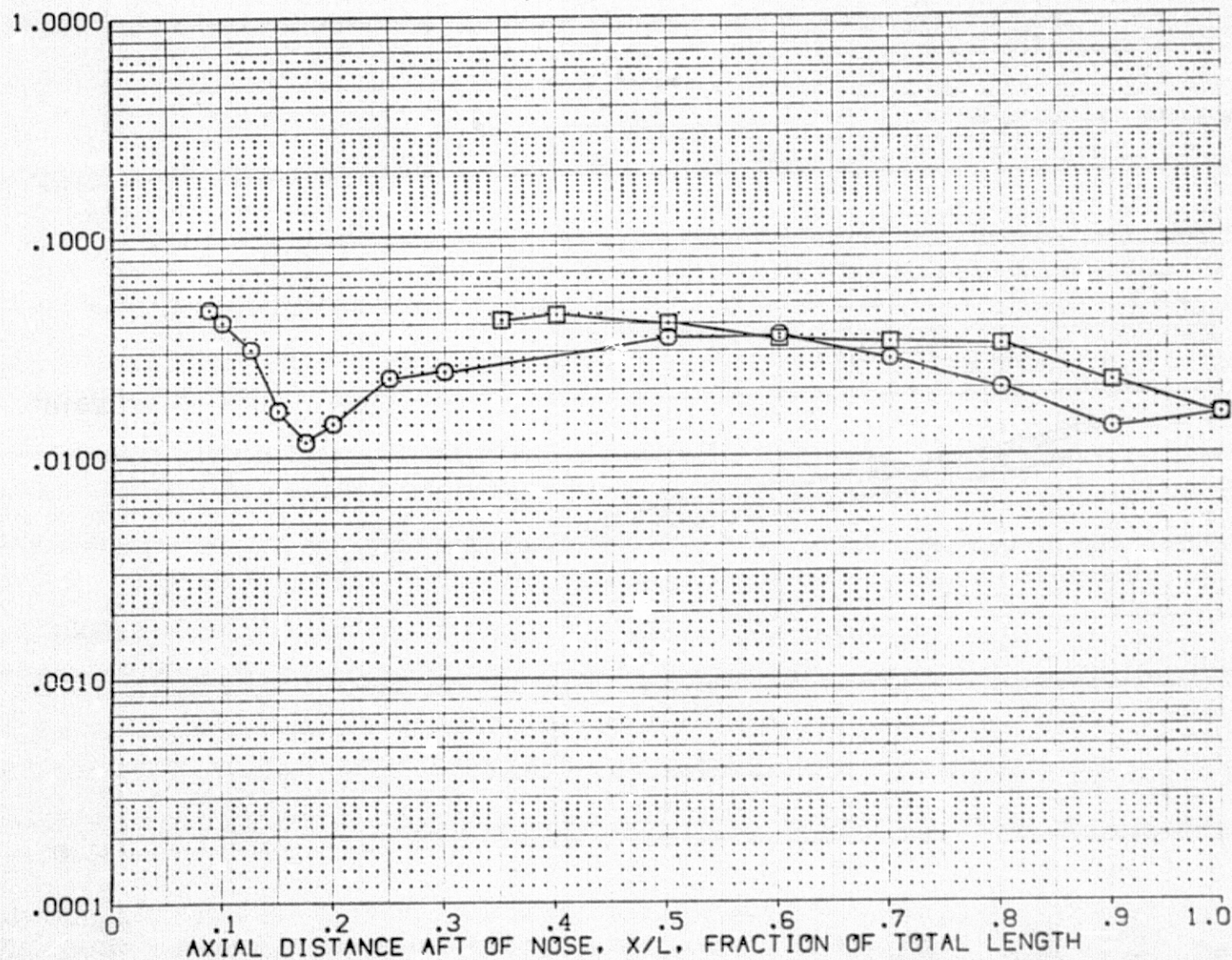


FIG. 4 INTEGRATED VEHICLE - ORBITER SURFACE Y VARIATION RN = 2 MILLION/FT.

SYMBOL	2Y/B	HAV/HT	RN/L
○	.400	.900	1.990
□	.600		
◇	.800		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	-5.000
BETA	.000	DELTA	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

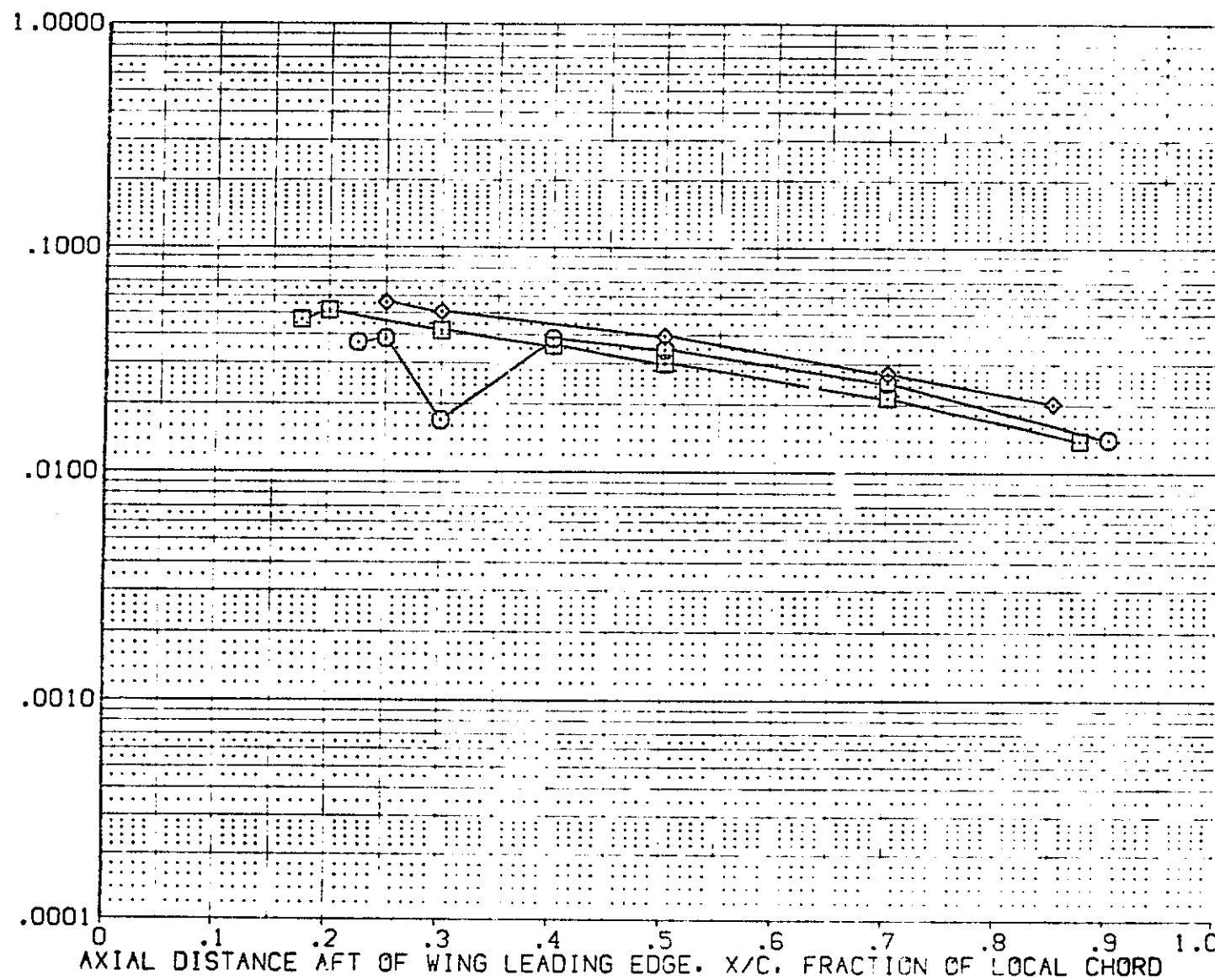


FIG. 4 INTEGRATED VEHICLE - ORBITER SURFACE Y VARIATION RN = 2 MILLION/FT.



IH16 089B + T8 + S6 ORBITER FUSELAGE SURFACE (RPQB13)

SYMBOL Y(BP) HAV/HT RN/L  
 ○ .000 .900 1.990  
 □ 70.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000 DELTAH .069

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

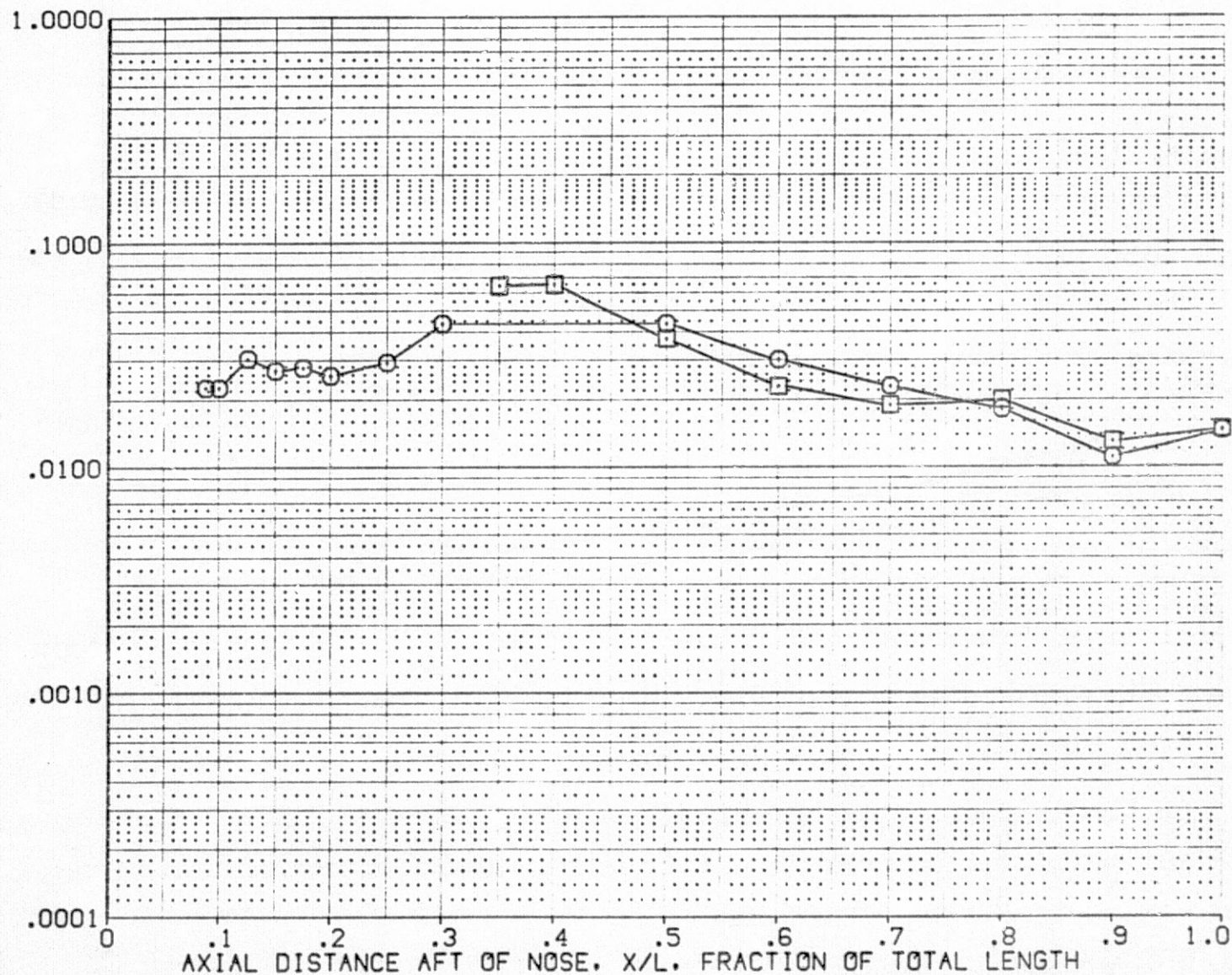
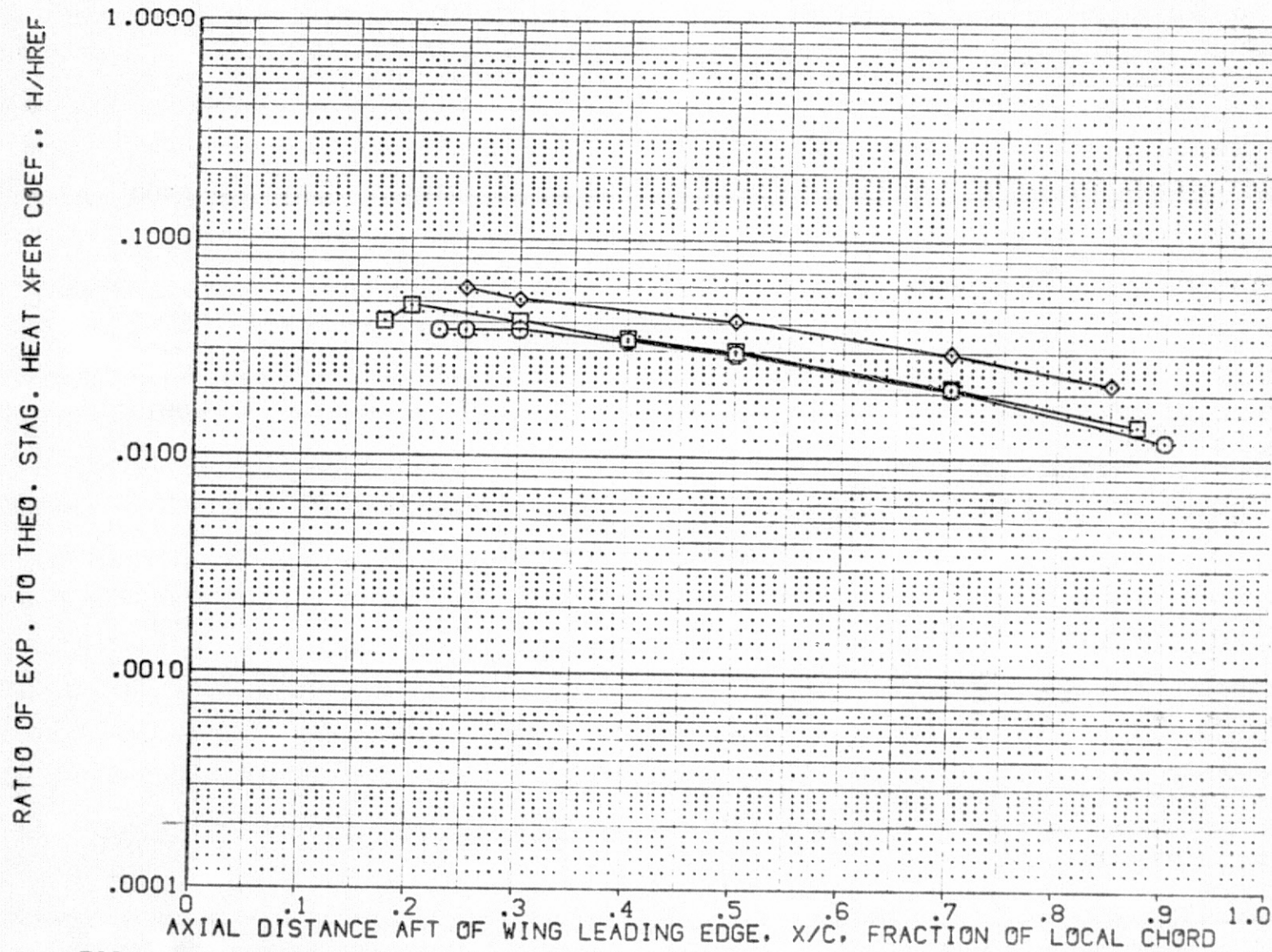


FIG. 4 INTEGRATED VEHICLE - ORBITER SURFACE Y VARIATION RN = 2 MILLION/FT.



SYMBOL	2Y/B	HAW/HT	RN/L
○	.400	.900	1.990
□	.600		
◇	.800		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.069

FIG. 4 INTEGRATED VEHICLE - ORBITER SURFACE Y VARIATION  $RN = 2$  MILLION/FT.

# IH16 089B+T8+S6+GRIT ORBITER FUSELAGE SURFACE (RPQB15)

SYMBOL Y(BP) HAV/HT RN/L  
 ○ .000 .900 1.890  
 □ 70.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000 DELTAH .175  
 GRITNO 25.000

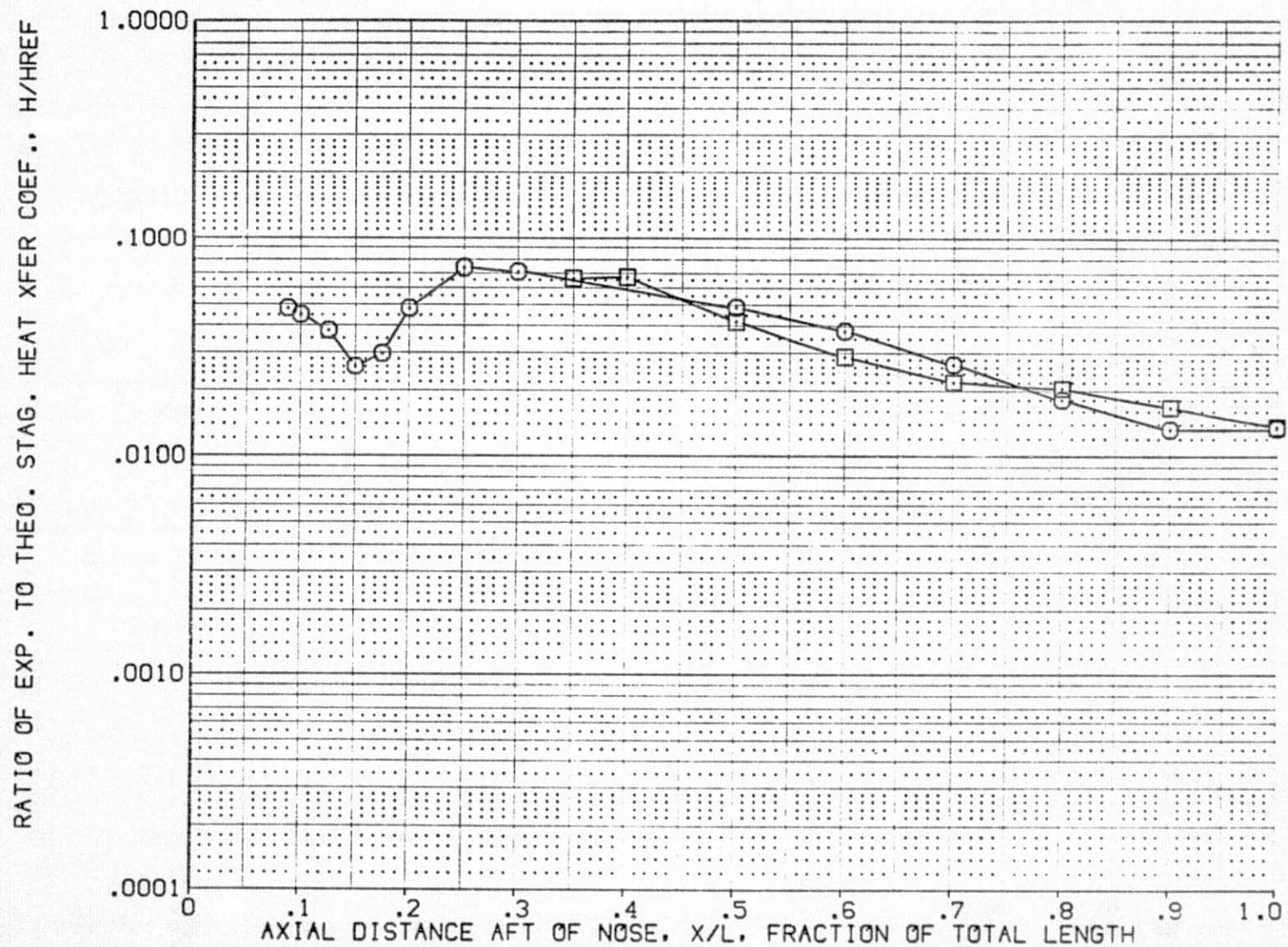


FIG. 4 INTEGRATED VEHICLE - ORBITER SURFACE Y VARIATION RN = 2 MILLION/FT.

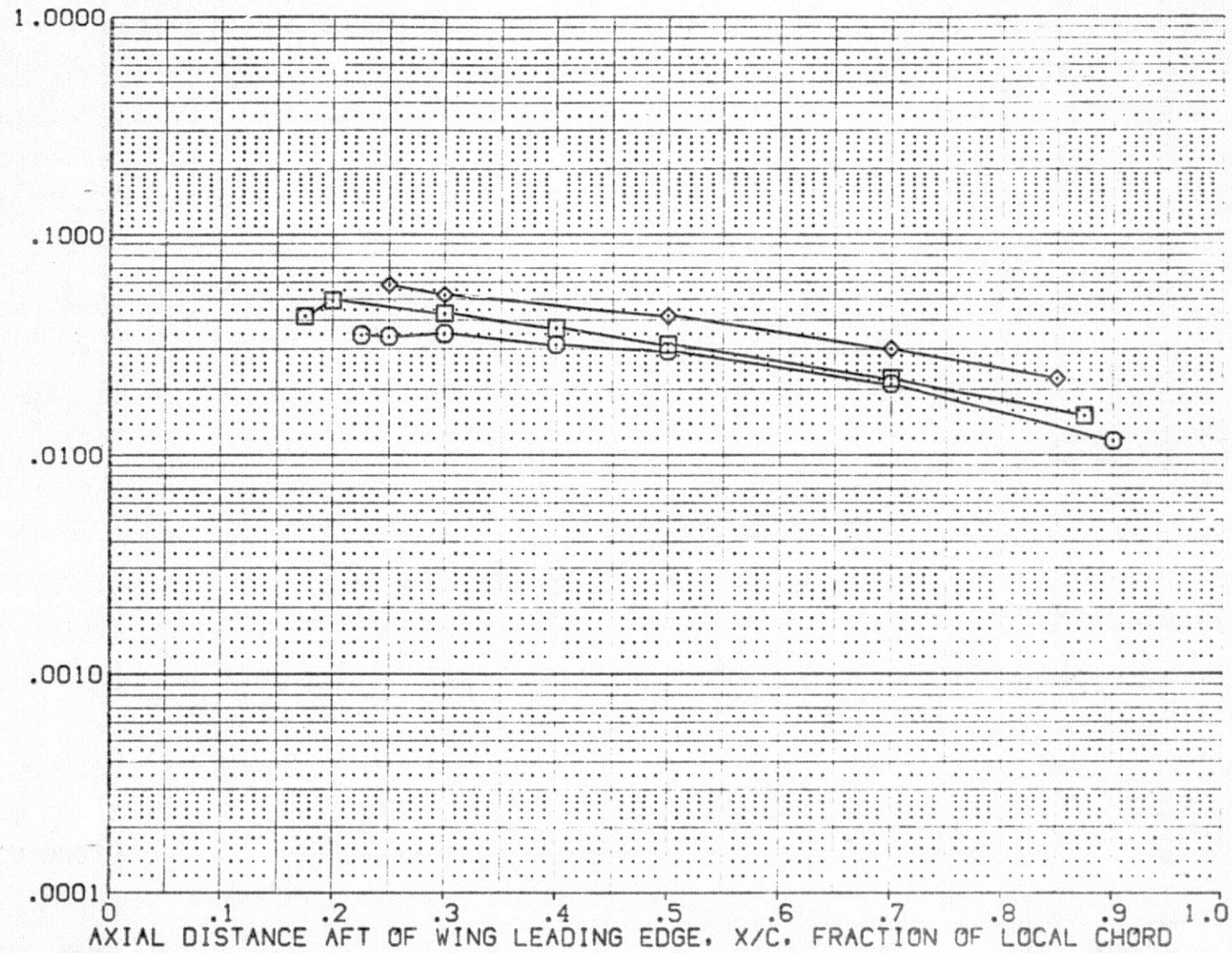


## IH16 089B+T8+S6+GRIT ORBITER WING SURFACE

(RPQW15)

SYMBOL	2Y/B	HAW/HT	RN/L
○	.400	.900	1.890
□	.600		
◇	.800		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175
GRITNO	25.000		

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $H/H_{REF}$ FIG. 4 INTEGRATED VEHICLE - ORBITER SURFACE Y VARIATION  $RN = 2$  MILLION/FT.

IH16 089B + T8 + S6 ORBITER FUSELAGE SURFACE (RPQB01)

SYMBOL Y(BP) HAW/HT RN/L  
 O .000 .900 4.570  
 □ 70.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000 DELTAH .175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

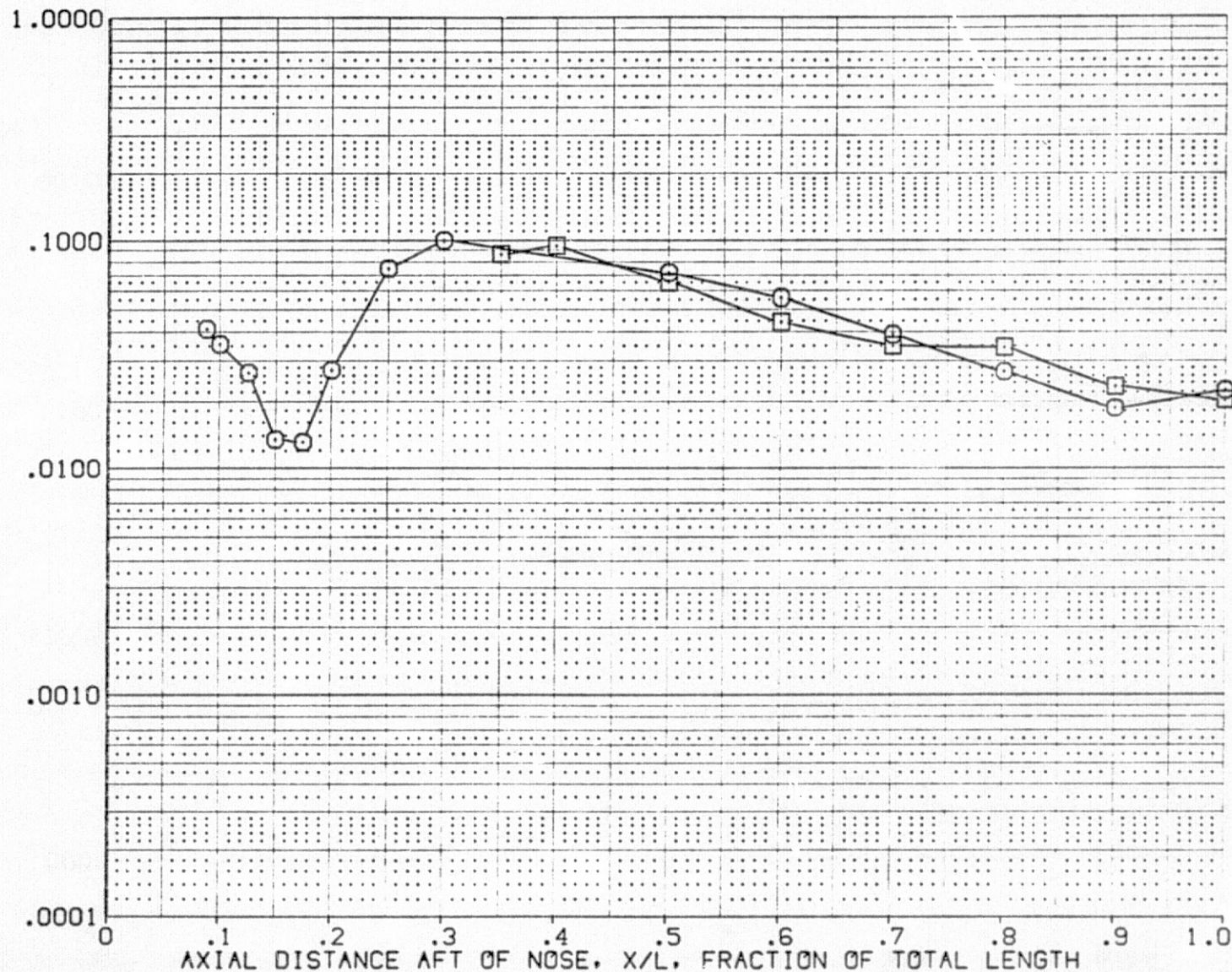
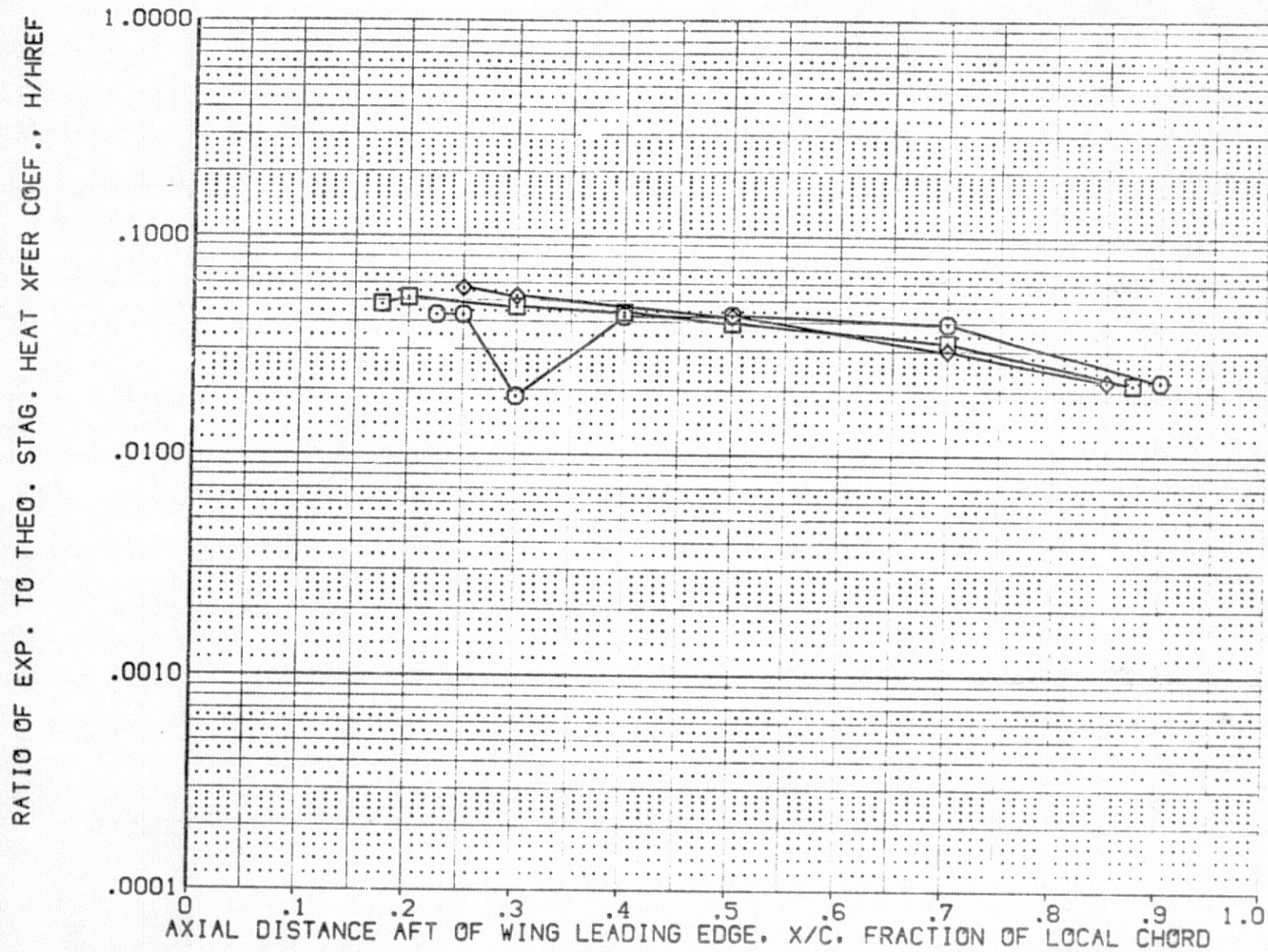


FIG. 5 INTEGRATED VEHICLE - ORBITER SURFACE Y VARIATION RN = 5 MILLION/FT.



SYMBOL	2Y/B	HAW/HT	RV/L
○	.400	.900	4.570
□	.600		
◇	.800		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

FIG. 5 INTEGRATED VEHICLE - ORBITER SURFACE Y VARIATION  $RN = 5$  MILLION/FT.

IH16 089B + T8 + S6 ORBITER FUSELAGE SURFACE (RPQB02)

SYMBOL	Y(BP)	HAW/HT	RN/L		MACH	PARAMETRIC VALUES	
○	.000	.900	4.560		3.700	ALPHA	-5.000
□	70.000				BETA	DELTAH	.175



FIG. 5 INTEGRATED VEHICLE - ORBITER SURFACE Y VARIATION RN = 5 MILLION/FT.



SYMBOL	2Y/B	HAW/HT	RN/L
○	.400	.900	4.560
□	.600		
◇	.800		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	-5.000
BETA	.000	DELTAH	.175

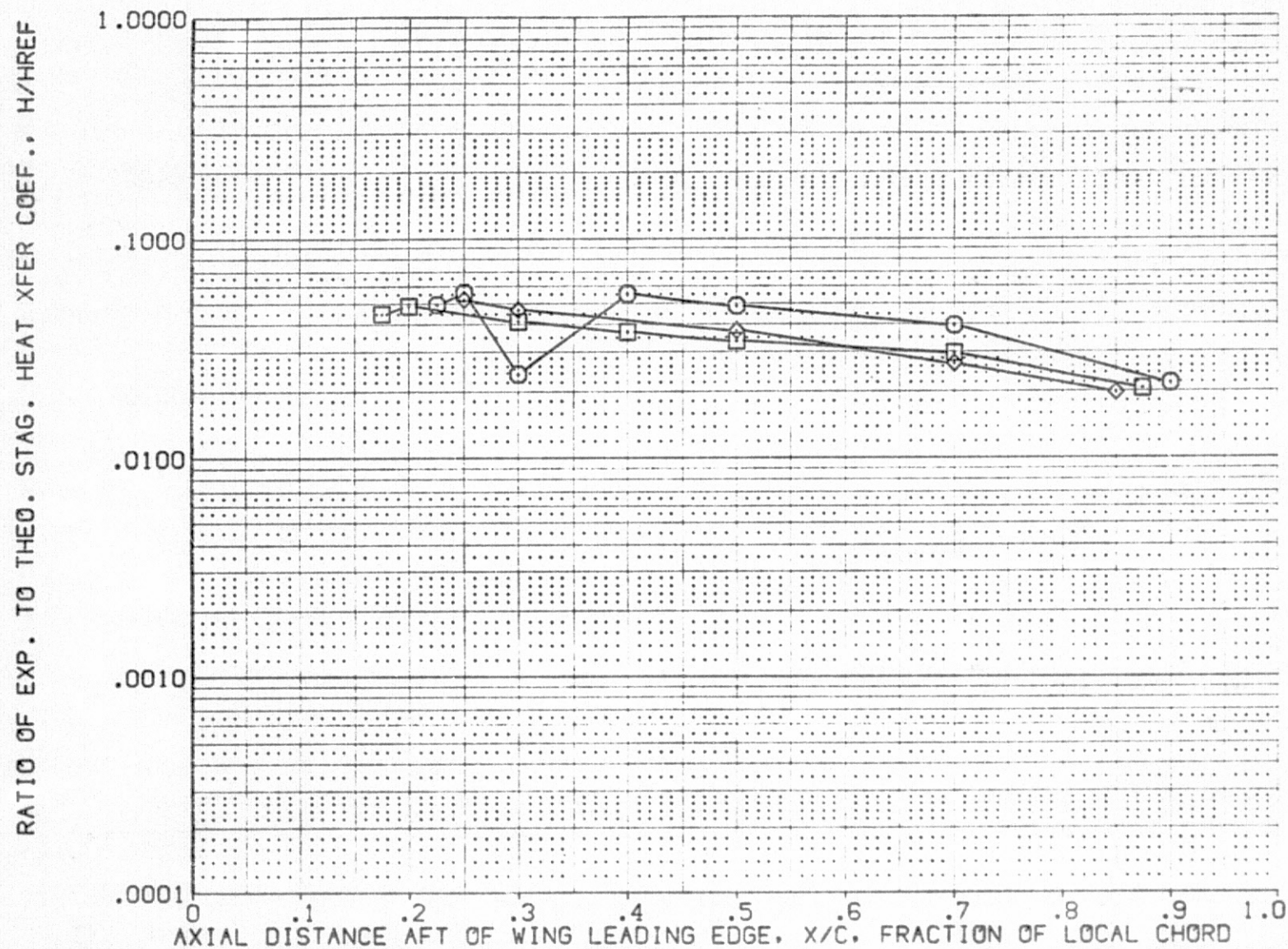


FIG. 5 INTEGRATED VEHICLE - ORBITER SURFACE Y VARIATION RN = 5 MILLION/FT.

IH16 089B + T8 + S6 ORBITER FUSELAGE SURFACE (RPQB13)

SYMBOL Y(BP) HAW/HT RN/L  
 ○ .000 .900 4.550  
 □ 70.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000 DELTAH .069

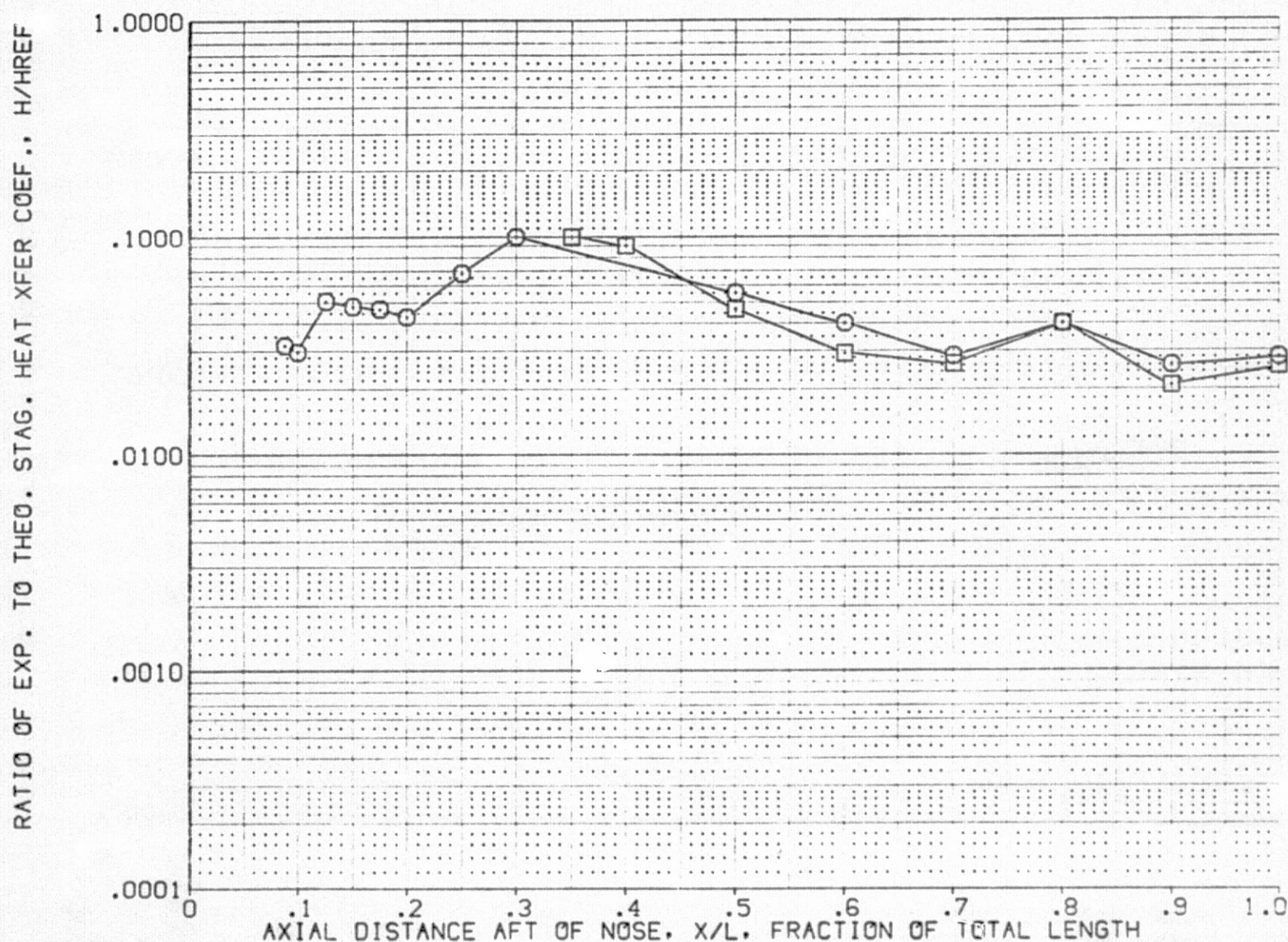
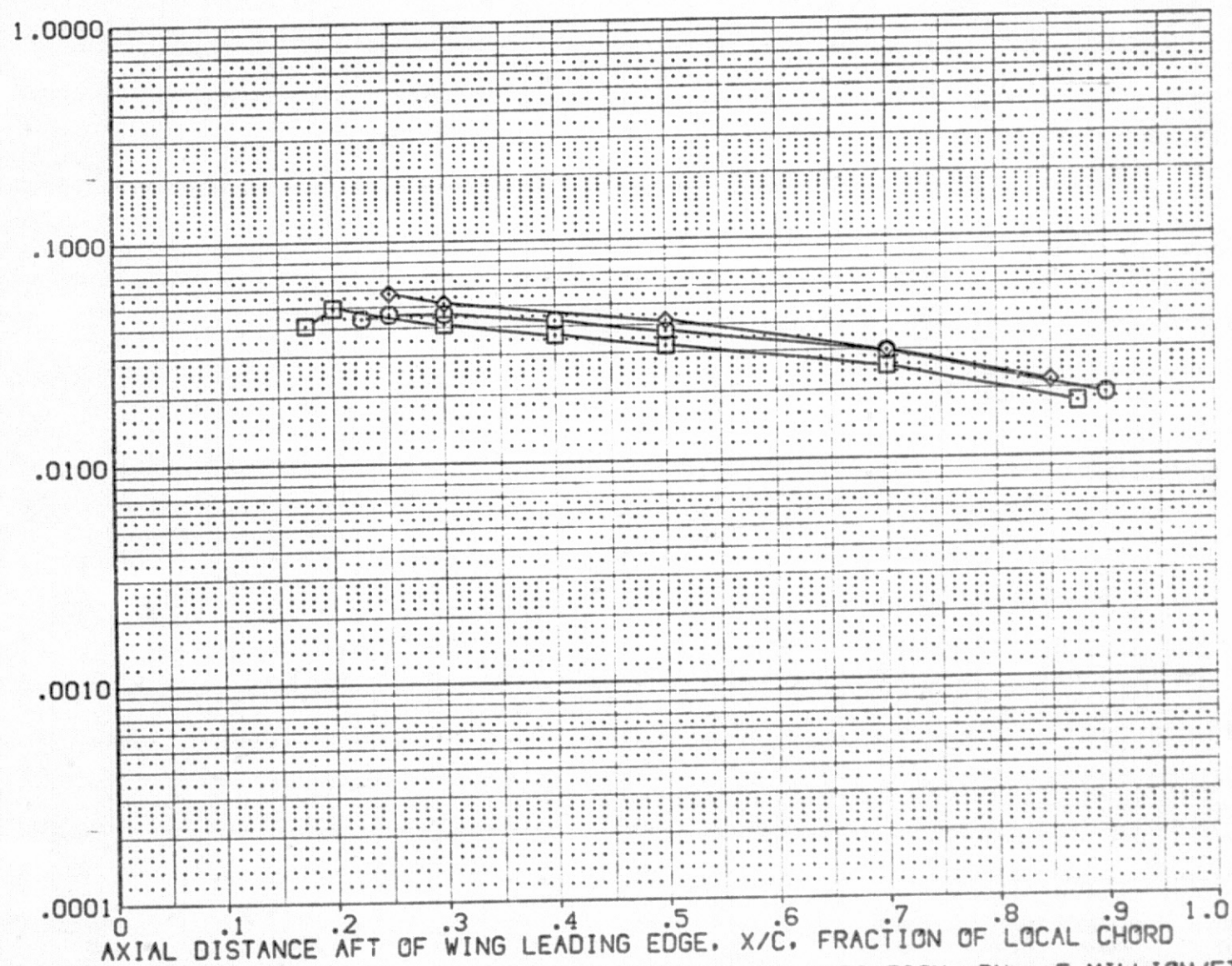


FIG. 5 INTEGRATED VEHICLE - ORBITER SURFACE Y VARIATION RN = 5 MILLION/FT.



SYMBOL	2Y/B	HAW/HT	RN/L	MACH	PARAMETRIC VALUES		
○	.400	.900	4.550	BETA	3.700	ALPHA	.000
□	.600				.000	DELTAH	.069
◇	.800						

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $H/H_{REF}$ FIG. 5 INTEGRATED VEHICLE - ORBITER SURFACE Y VARIATION  $RN = 5$  MILLION/FT.

# IH16 089B+T8+S6+GRIT ORBITER FUSELAGE SURFACE (RPQB15)

SYMBOL    Y(BP)    HAW/HT    RN/L  
 ○        .000        .900        4.620  
 □        70.000

PARAMETRIC VALUES  
 MACH        3.700    ALPHA        .000  
 BETA        .000    DELTAH       .175  
 GRITNO      25.000

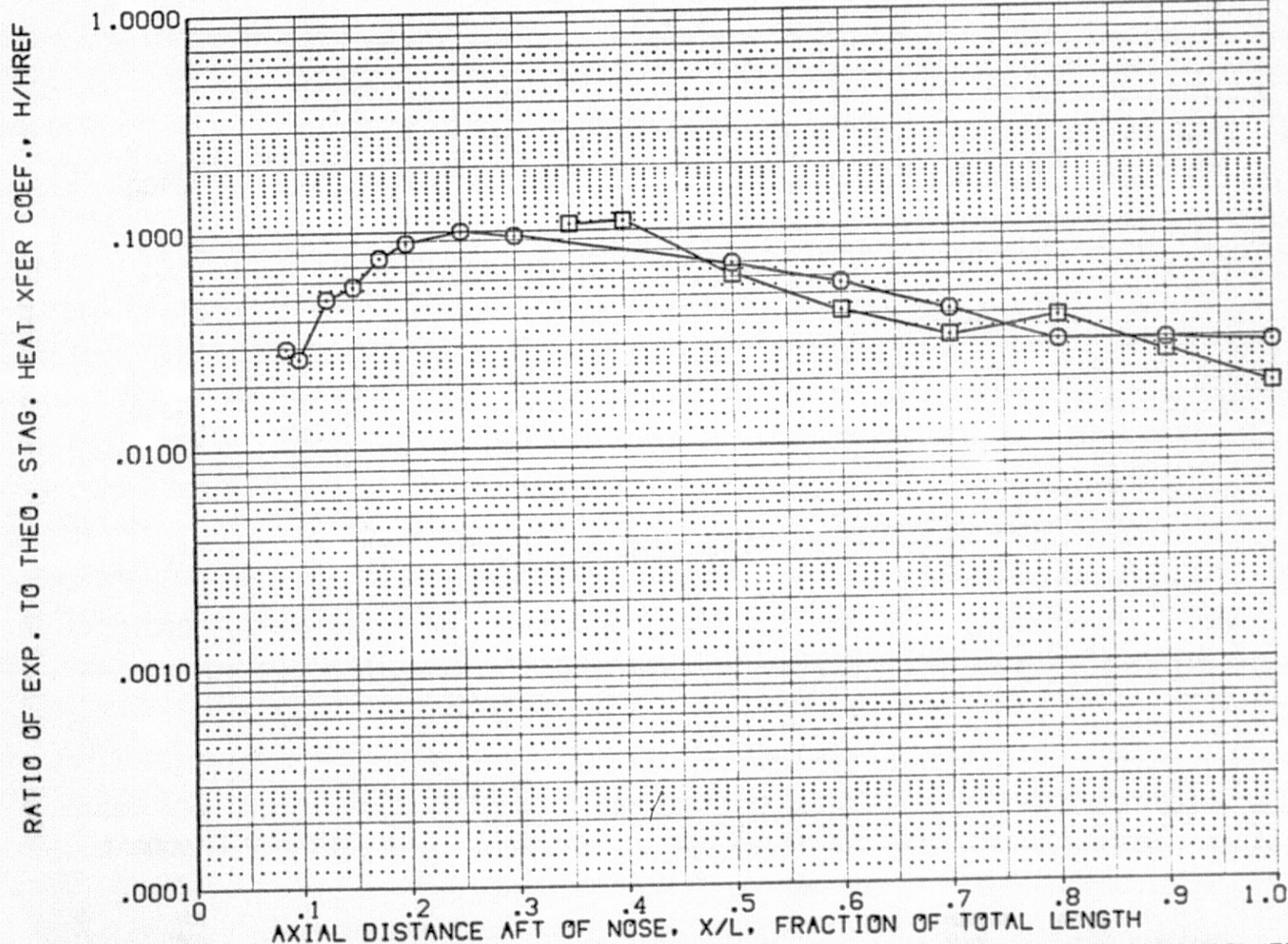


FIG. 5 INTEGRATED VEHICLE - ORBITER SURFACE Y VARIATION  $RN = 5$  MILLION/FT.



SYMBOL	2Y/B	HAW/HT	RN/L
○	.400	.900	4.620
□	.600		
◇	.800		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175
GRITNO	25.000		

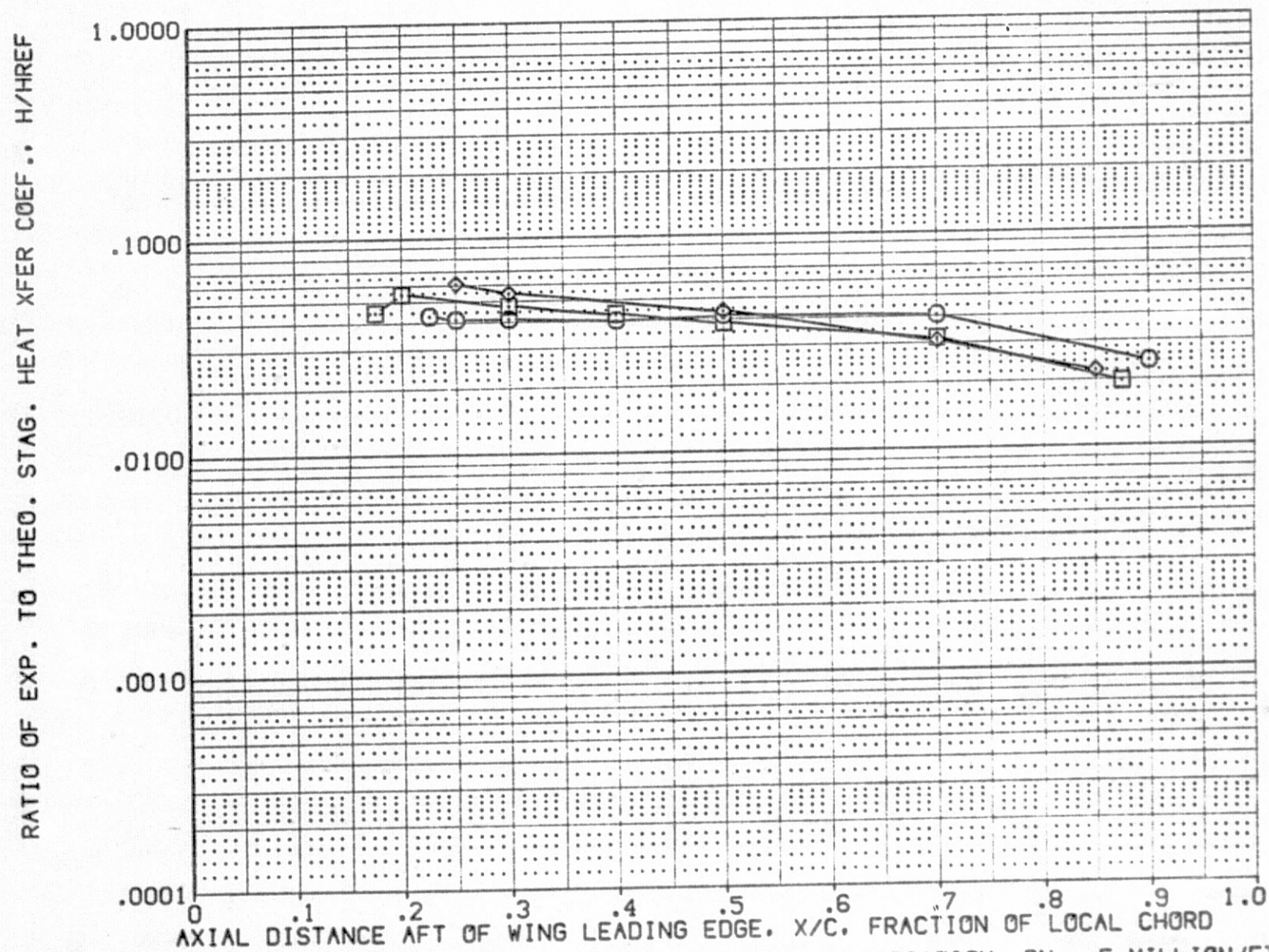


FIG. 5 INTEGRATED VEHICLE - ORBITER SURFACE Y VARIATION RN = 5 MILLION/FT.



IH16 089B

ORBITER FUSELAGE SURFACE (RPQB11)

SYMBOL	Y(BP)	HAW/HT	RN/L
○	.000	.900	1.910
□	70.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000		

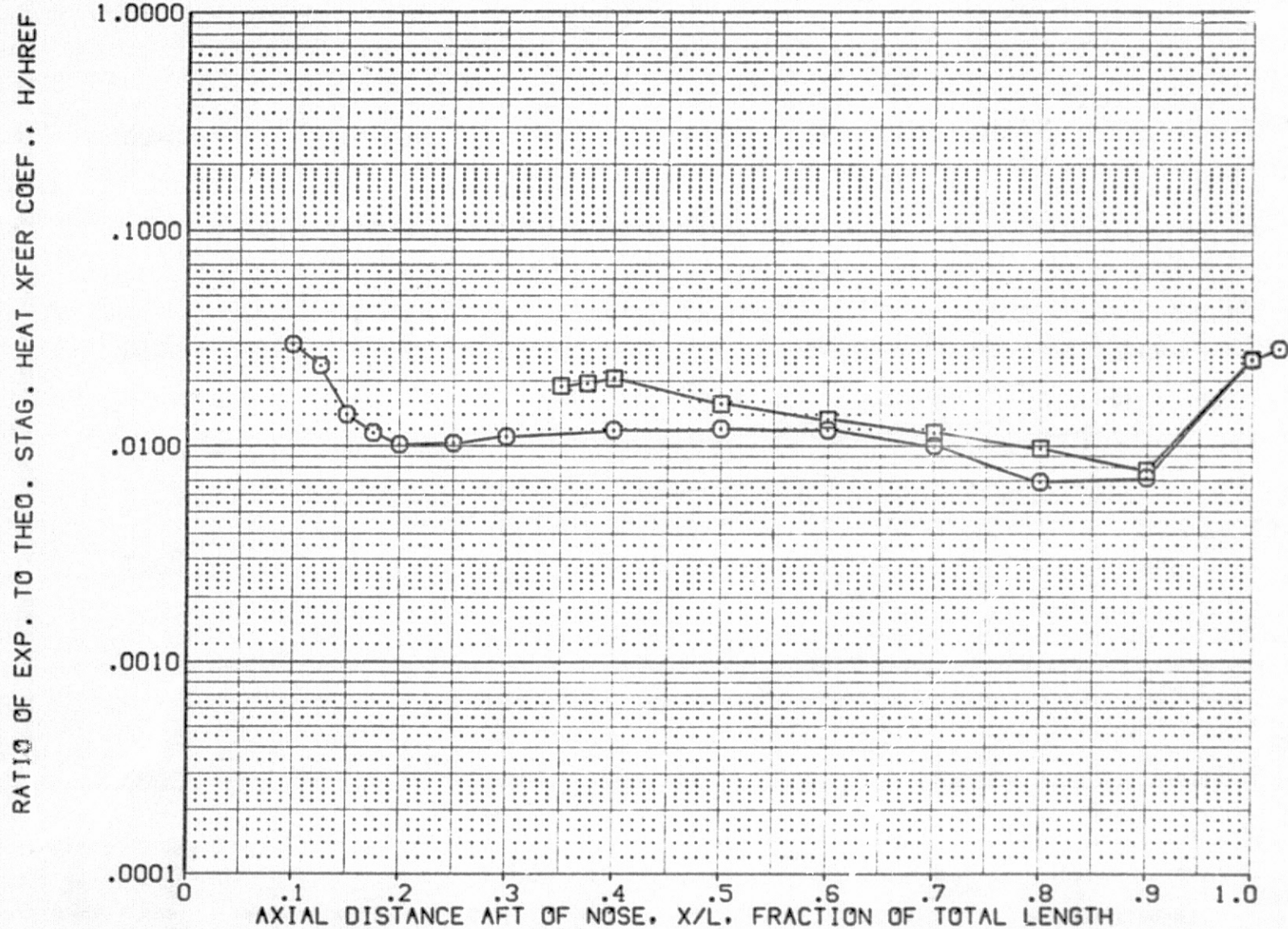


FIG. 6 ORBITER ALONE

Y VARIATION RN = 2 MILLION/FT.



IH16 089B

ORBITER WING SURFACE

(RPQW11)

SYMBOL	2Y/B	HAY/HT	RN/L
○	.400	.900	1.910
□	.600		
◇	.800		

MACH  
BETA

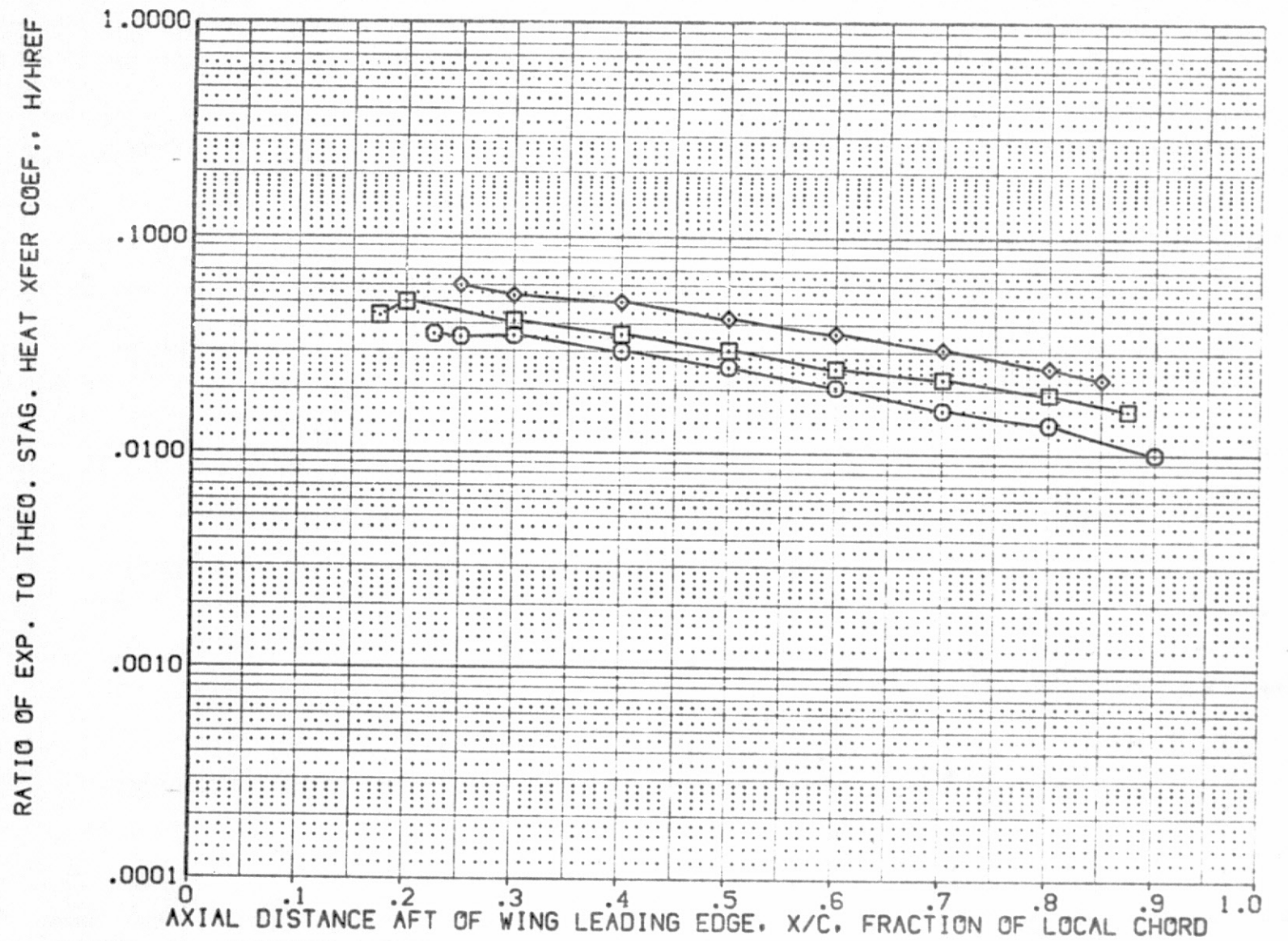
PARAMETRIC VALUES  
3.700 ALPHA .000  
.000


FIG. 6 ORBITER ALONE

Y VARIATION  $RN = 2$  MILLION/FT.



IH16 089B

ORBITER FUSELAGE SURFACE (RPQB12)

SYMBOL	Y(BP)	HAW/HT	RN/L
○	.000	.900	1.950
□	70.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	-5.000
BETA	.000		



FIG. 6 ORBITER ALONE

Y VARIATION  $RN = 2$  MILLION/FT.



SYMBOL	2Y/B	HAW/HT	RN/L
○	.400	.900	1.950
□	.600		
◇	.800		

MACH  
BETA

PARAMETRIC VALUES

3.700  
.000

ALPHA

-5.000

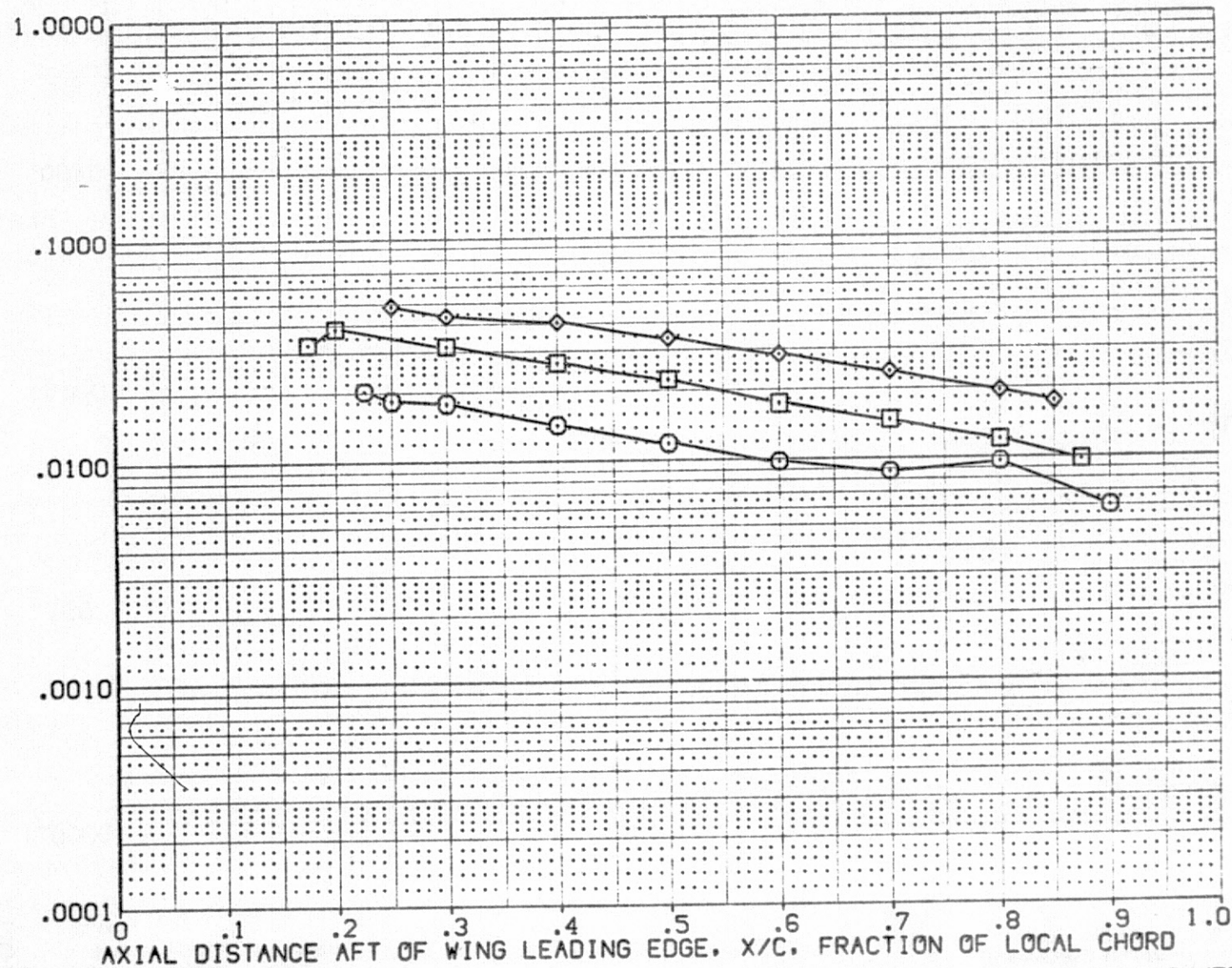
RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $H/H_{REF}$ 

FIG. 6 ORBITER ALONE

Y VARIATION RN = 2 MILLION/FT.



IH16 089B + GRIT

ORBITER FUSELAGE SURFACE

(RPQB16)

SYMBOL	Y(BP)	HAW/HT	RN/L
○	.000	.900	1.910
□	70.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	GRITNO	25.000

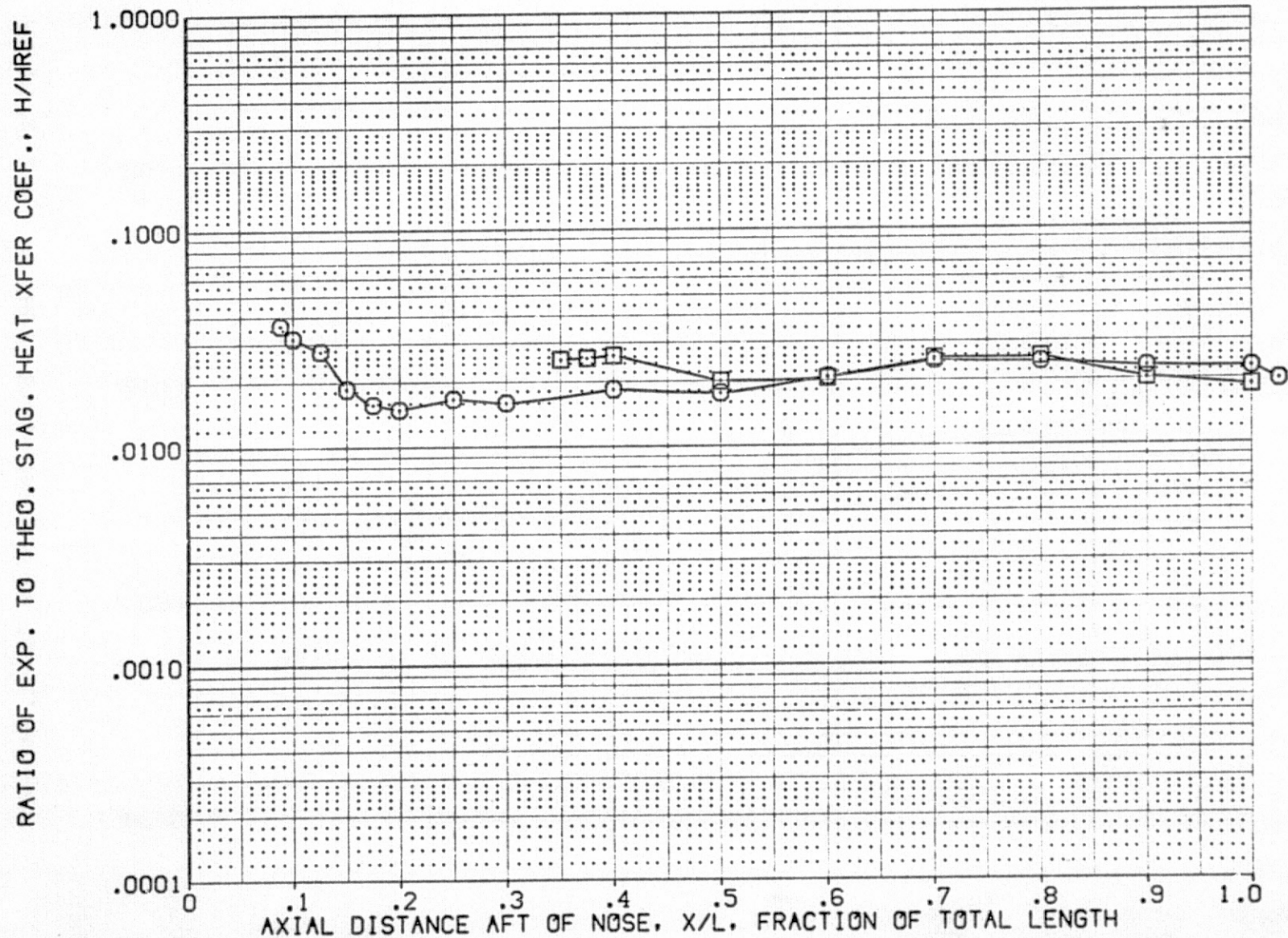


FIG. 6 ORBITER ALONE

Y VARIATION  $RN = 2$  MILLION/FT.

IH16 089B + GRIT

ORBITER WING SURFACE

(RPQW16)

SYMBOL

2Y/B

HAW/HT

RN/L

MACH  
BETA

PARAMETRIC VALUES

3.700

ALPHA

.000

GRITNO

25.000

◇  
□  
○.400  
.600  
.800

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

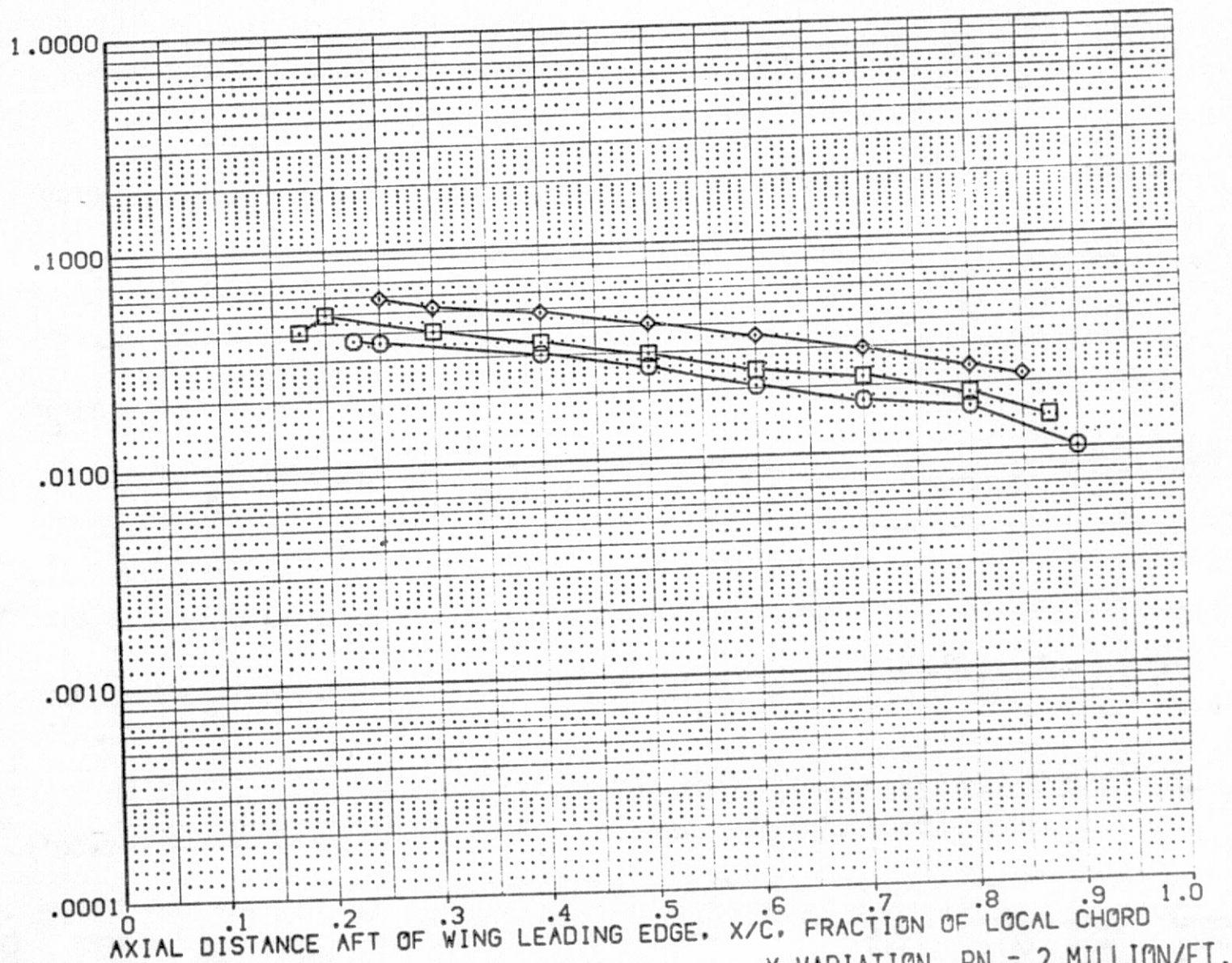


FIG. 6 ORBITER ALONE

Y VARIATION RN = 2 MILLION/FT.

PAGE

22



IH16 089B

ORBITER FUSELAGE SURFACE (RPQB11)

SYMBOL	Y(BP)	HAW/HT	RN/L
○	.000	.900	4.540
□	70.000		

PARAMETRIC VALUES		
MACH	3.700	ALPHA
BETA	.000	

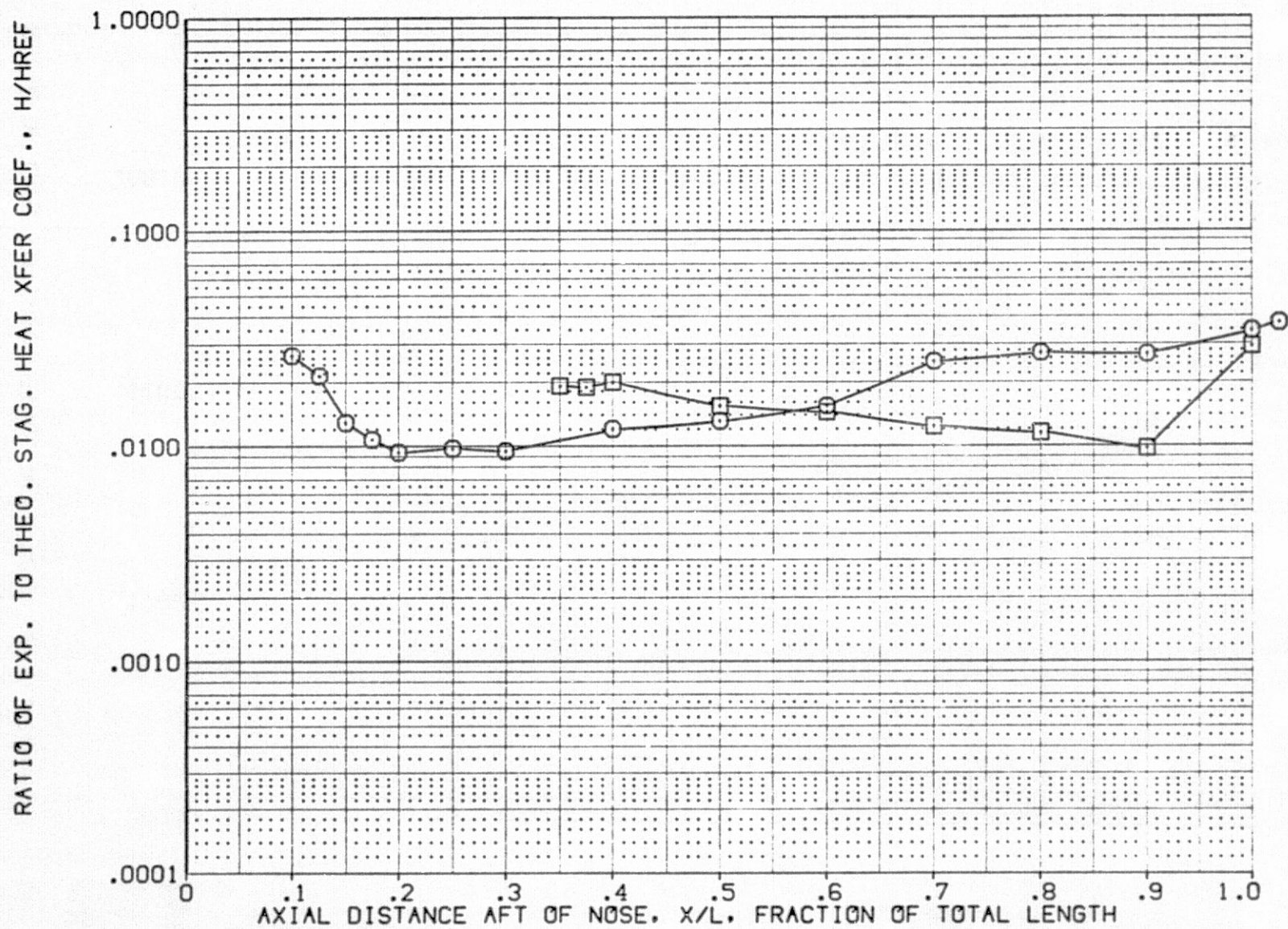


FIG. 7 ORBITER ALONE

Y VARIATION  $RN = 5$  MILLION/FT.

IH16 089B

ORBITER WING SURFACE

(RPQW11)

SYMBOL	2Y/B	HAW/HT	RN/L
○	.400	.900	4.540
□	.600		
◇	.800		

PARAMETRIC VALUES		
MACH	3.700	ALPHA
BETA	.000	

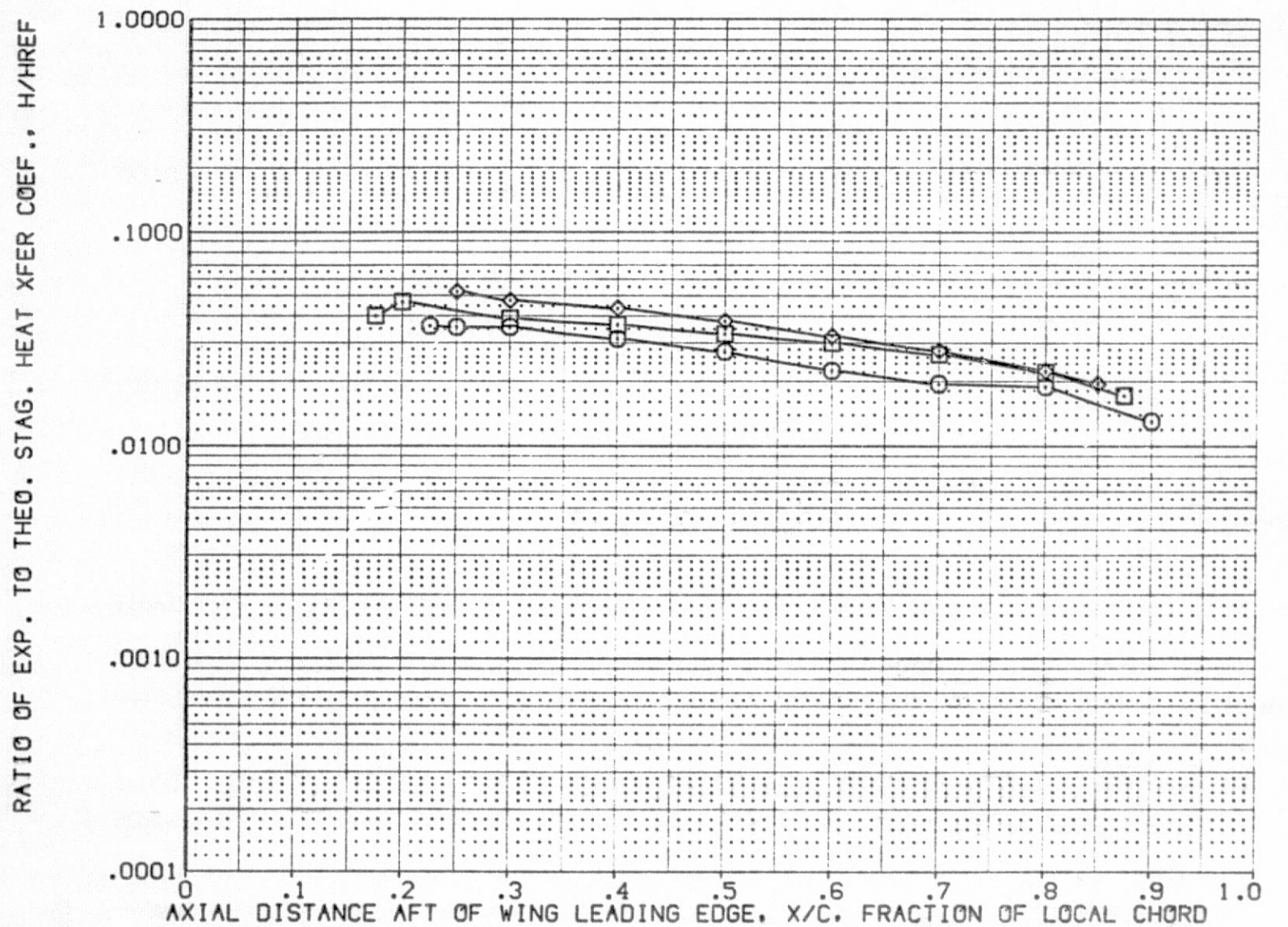


FIG. 7 ORBITER ALONE

Y VARIATION RN = 5 MILLION/FT.





IH16 089B

ORBITER FUSELAGE SURFACE (RPQB12)

SYMBOL	Y(BP)	HAW/HT	RN/L
○	.000	.900	4.560
□	70.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	-5.000
BETA	.000		

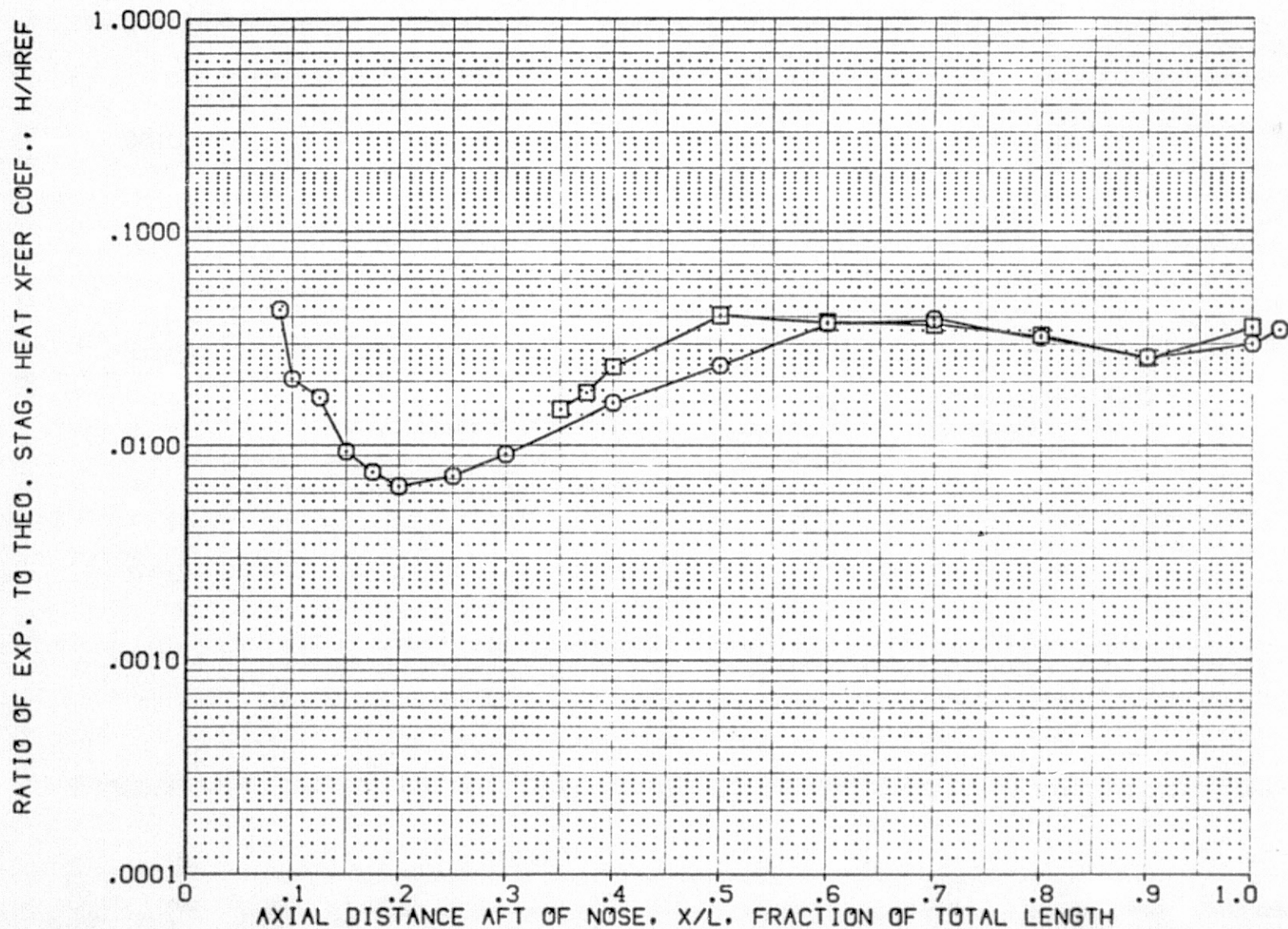


FIG. 7 ORBITER ALONE

Y VARIATION  $RN = 5$  MILLION/FT.

IH16 089B

ORBITER WING SURFACE

(RPQW12)

SYMBOL	2Y/B	HAW/HT	RN/L
○	.400	.900	4.560
□	.600		
◇	.800		

PARAMETRIC VALUES		
MACH	3.700	ALPHA
BETA	.000	-5.000

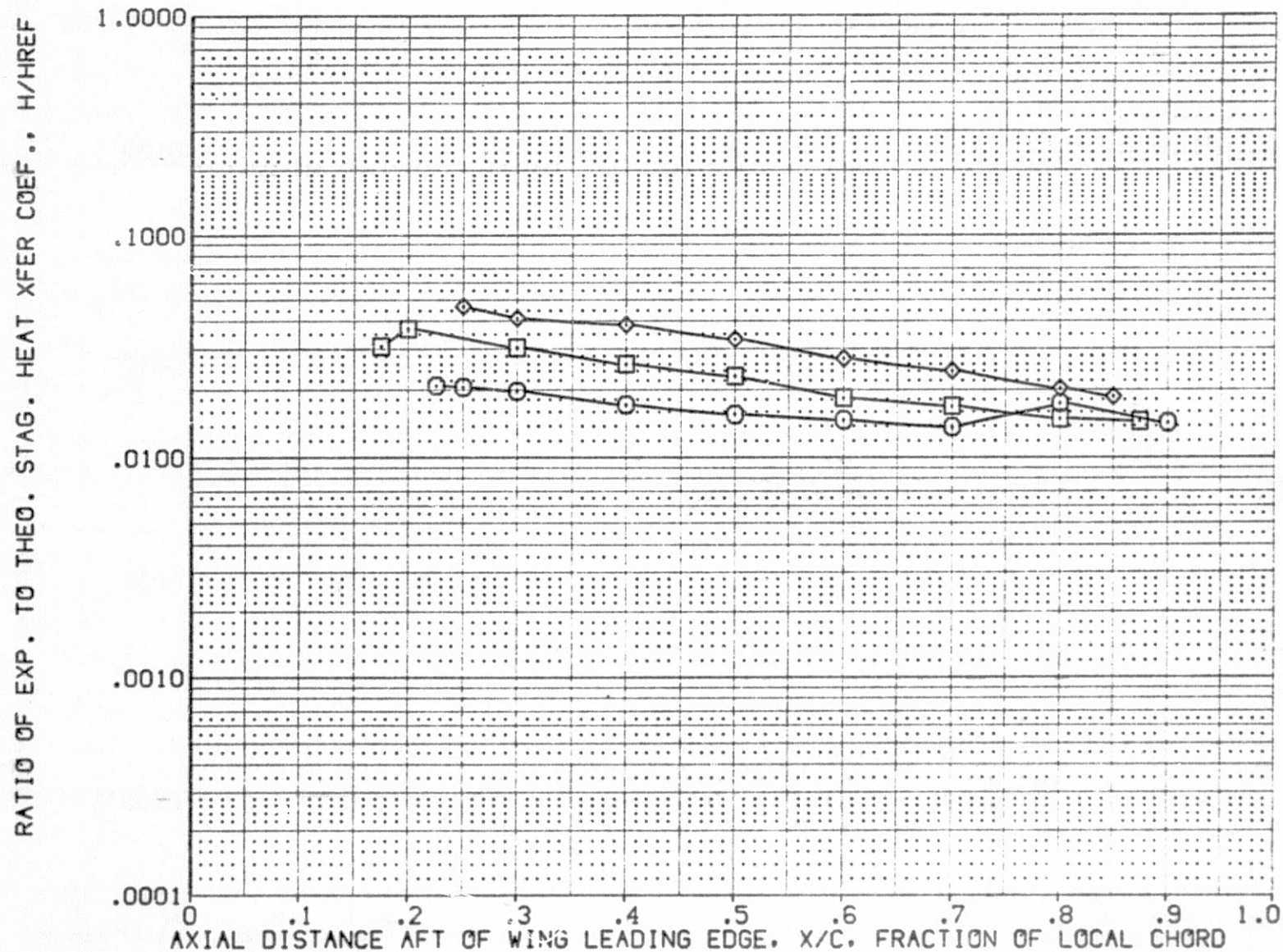


FIG. 7 ORBITER ALONE

Y VARIATION  $RN = 5$  MILLION/FT.



IH16 089B + GRIT

ORBITER FUSELAGE SURFACE

(RPQB16)

SYMBOL	Y(BP)	HAW/HT	RN/L
○	.000	.900	4.570
□	70.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	GRITNO	25.000

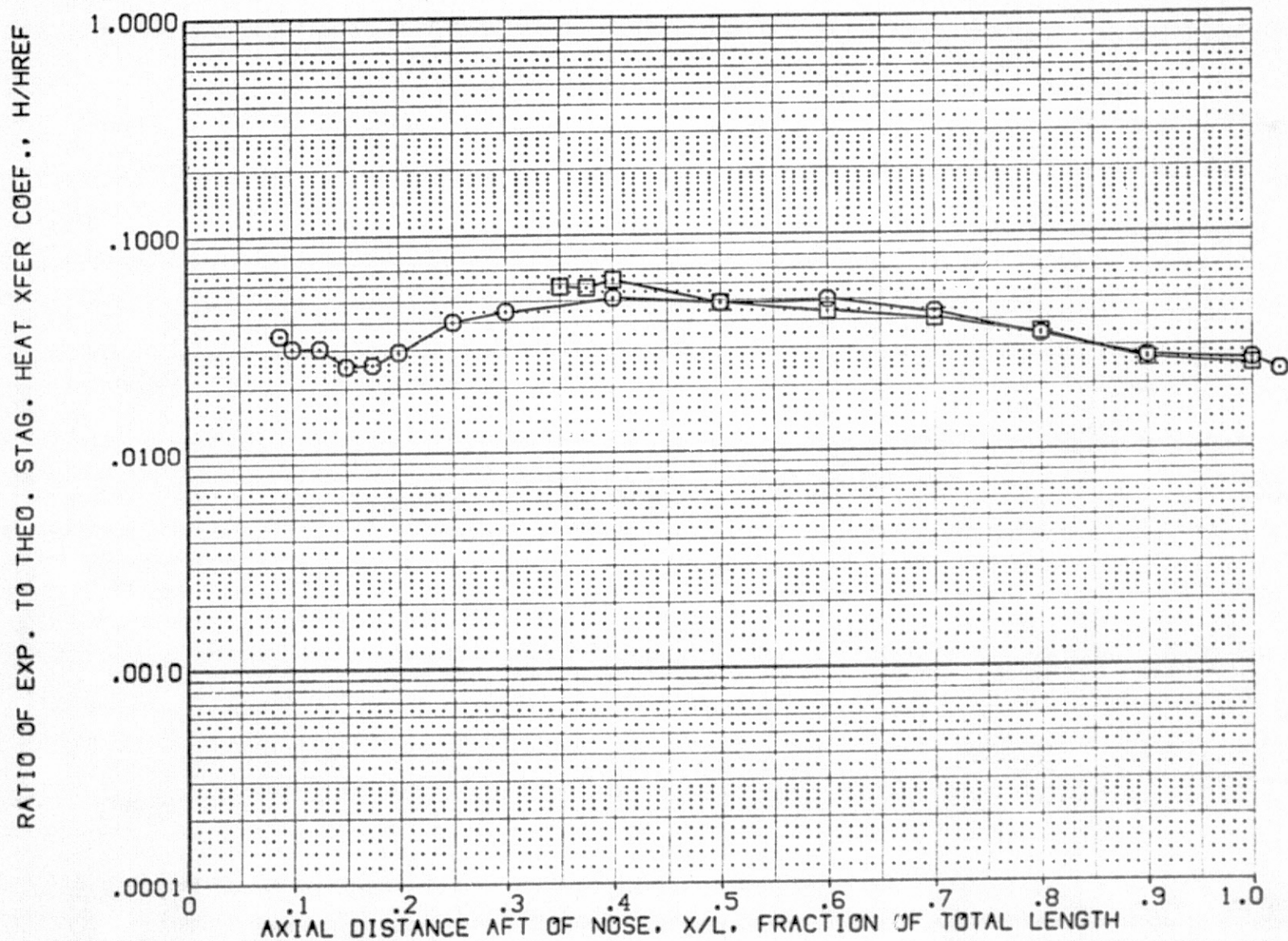


FIG. 7 ORBITER ALONE

Y VARIATION  $RN = 5$  MILLION/FT.

IH16 089B + GRIT

ORBITER WING SURFACE

(RPQW16)

SYMBOL	2Y/B	HAW/HT	RN/L
○	.400	.900	4.570
□	.600		
◇	.800		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	GRITNO	25.000

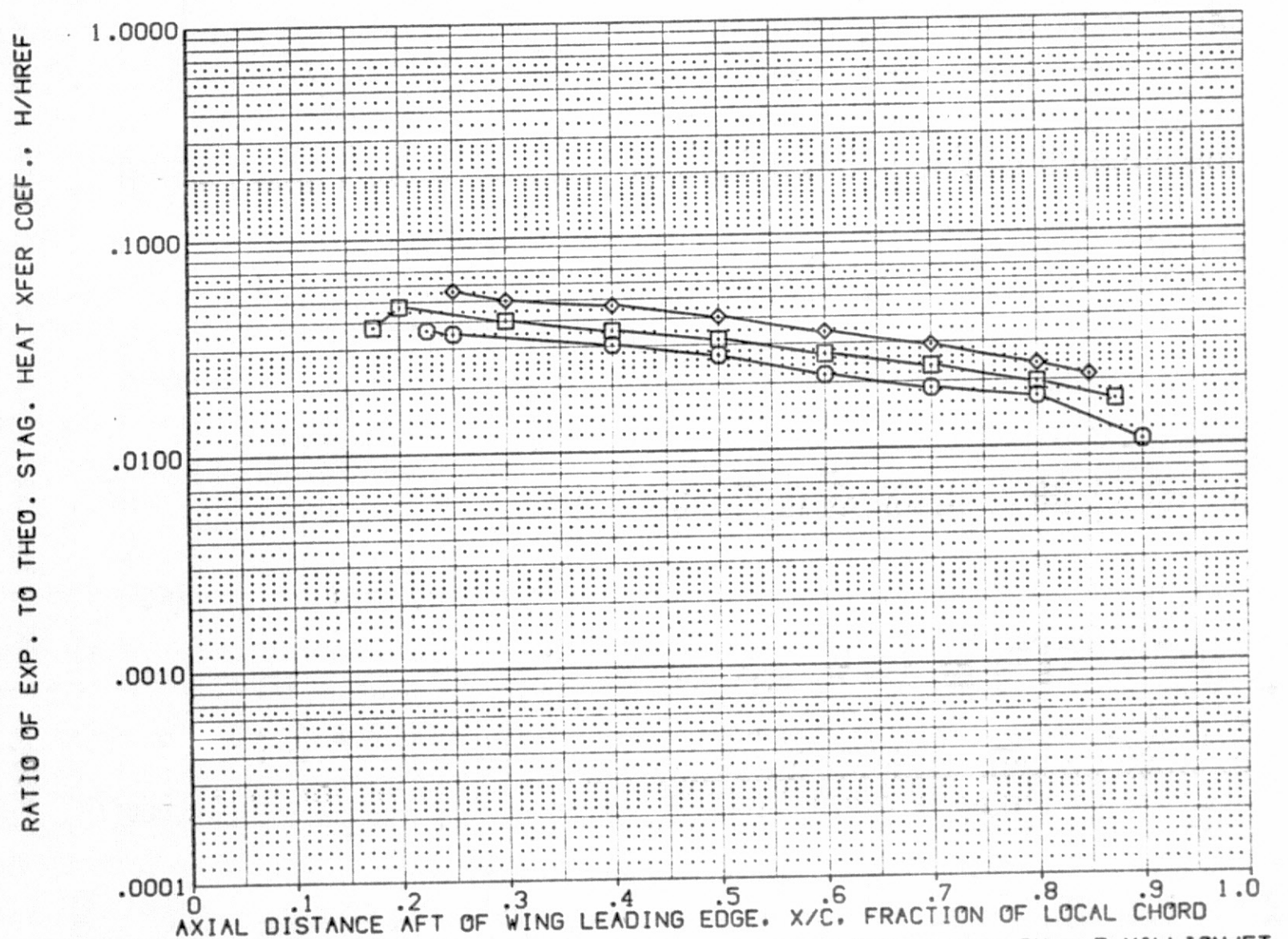


FIG. 7 ORBITER ALONE

Y VARIATION  $RN = 5$  MILLION/FT.



SYMBOL Y(BP) HAY/HT RN/L  
 ○ .000 .900 1.930  
 □ 70.000

PARAMETRIC VALUES  
 MACH 3.700 BETA .000  
 DELTAH .175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

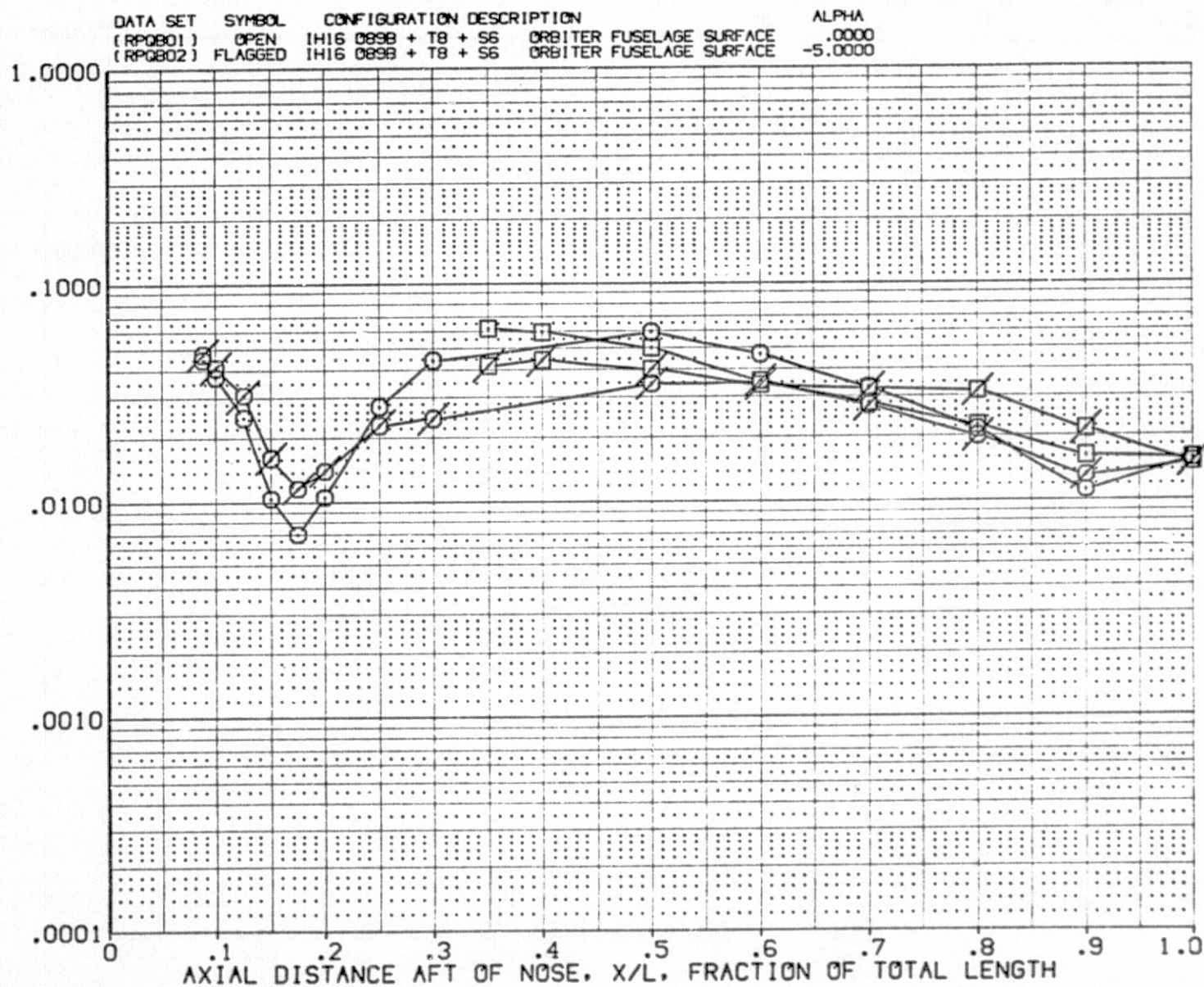


FIG. 8 INTEGRATED VEHICLE - ORBITER SURFACE ALPHA VARIATION RN/FT=2 DH=.175

SYMBOL	2Y/B	HAW/HT	RN/L
○	.400	.900	1.930
□	.600		
◇	.800		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
DELTAH	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

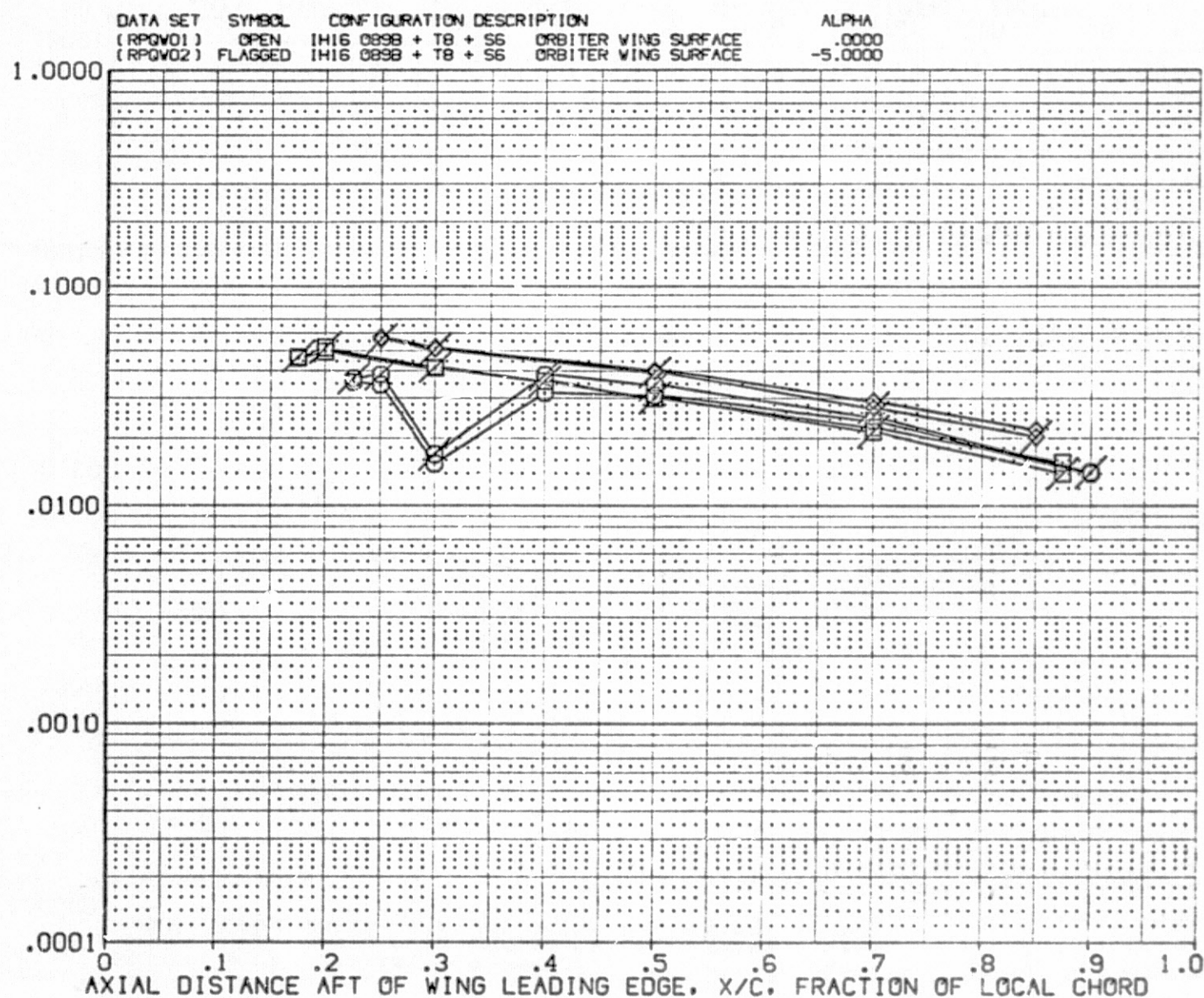


FIG. 8 INTEGRATED VEHICLE - ORBITER SURFACE ALPHA VARIATION RN/FT=2 DH=.175



SYMBOL Y(BP) HAV/HT RN/L  
 ○ .000 .900 1.990  
 □ 70.000

PARAMETRIC VALUES  
 MACH 3.700 BETA .000  
 DELTAH .069

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF. H/HREF

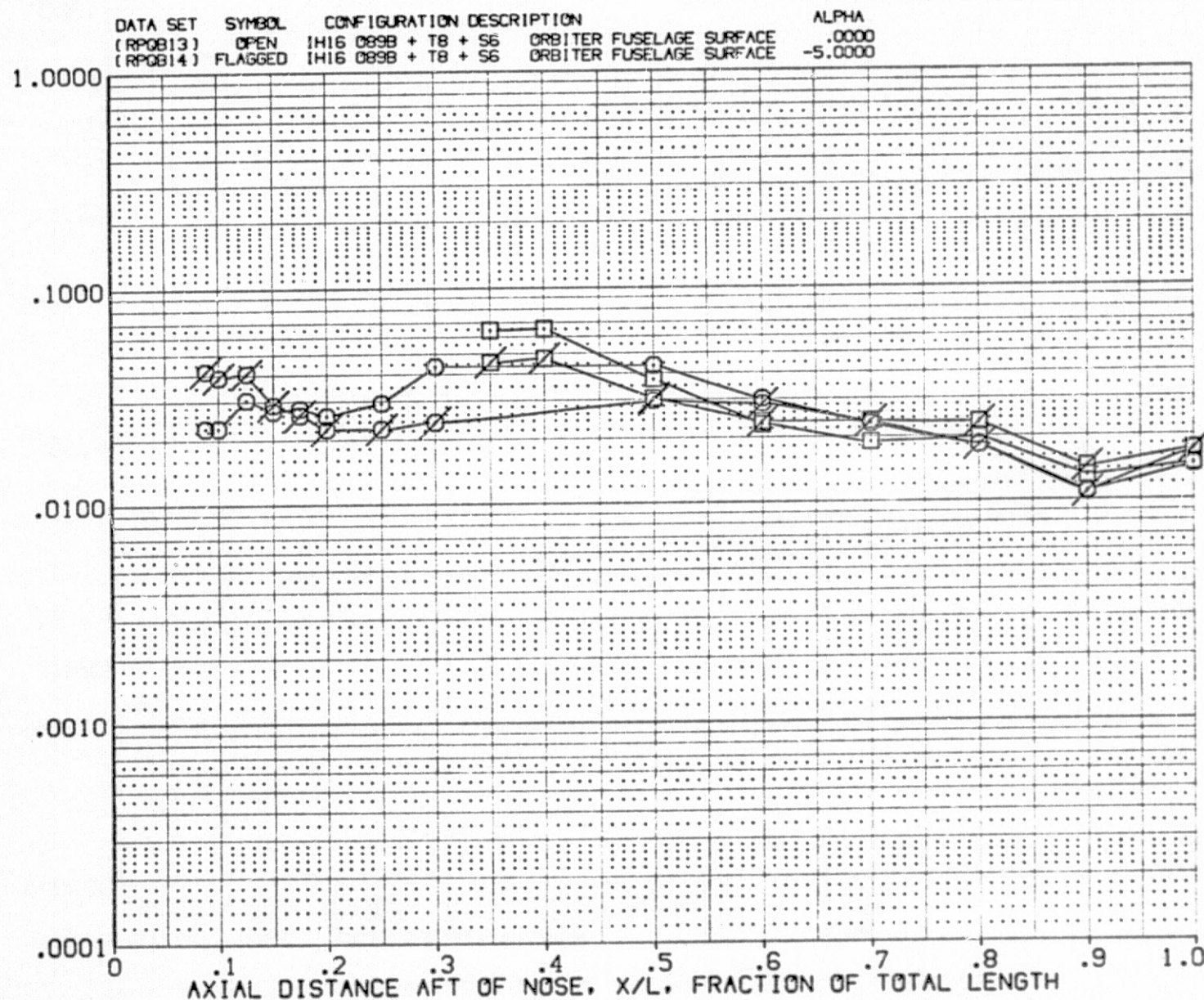


FIG. 9 INTEGRATED VEHICLE - ORBITER SURFACE ALPHA VARIATION RN/FT=2 DH=.069



SYMBOL	2Y/B	HAW/HT	RN/L
○	.400	.900	1.990
□	.600		
◇	.800		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
DELTAH	.069

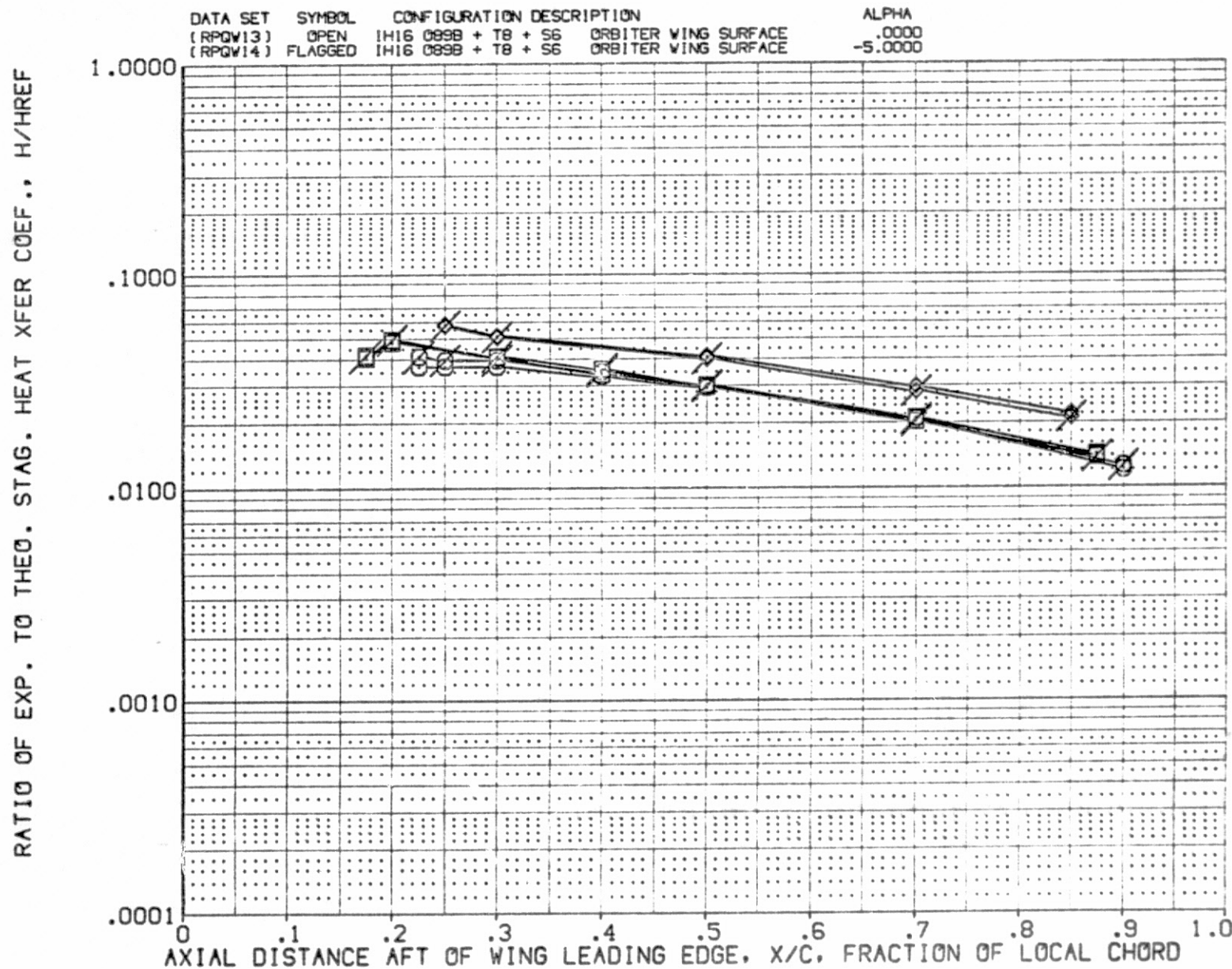


FIG. 9 INTEGRATED VEHICLE - ORBITER SURFACE ALPHA VARIATION RN/FT=2 DH=.069

SYMBOL Y(BP) HAW/HT RN/L  
 ○ .000 .900 4.570  
 □ 70.000

PARAMETRIC VALUES  
 MACH 3.700 BETA .000  
 DELTAH .175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

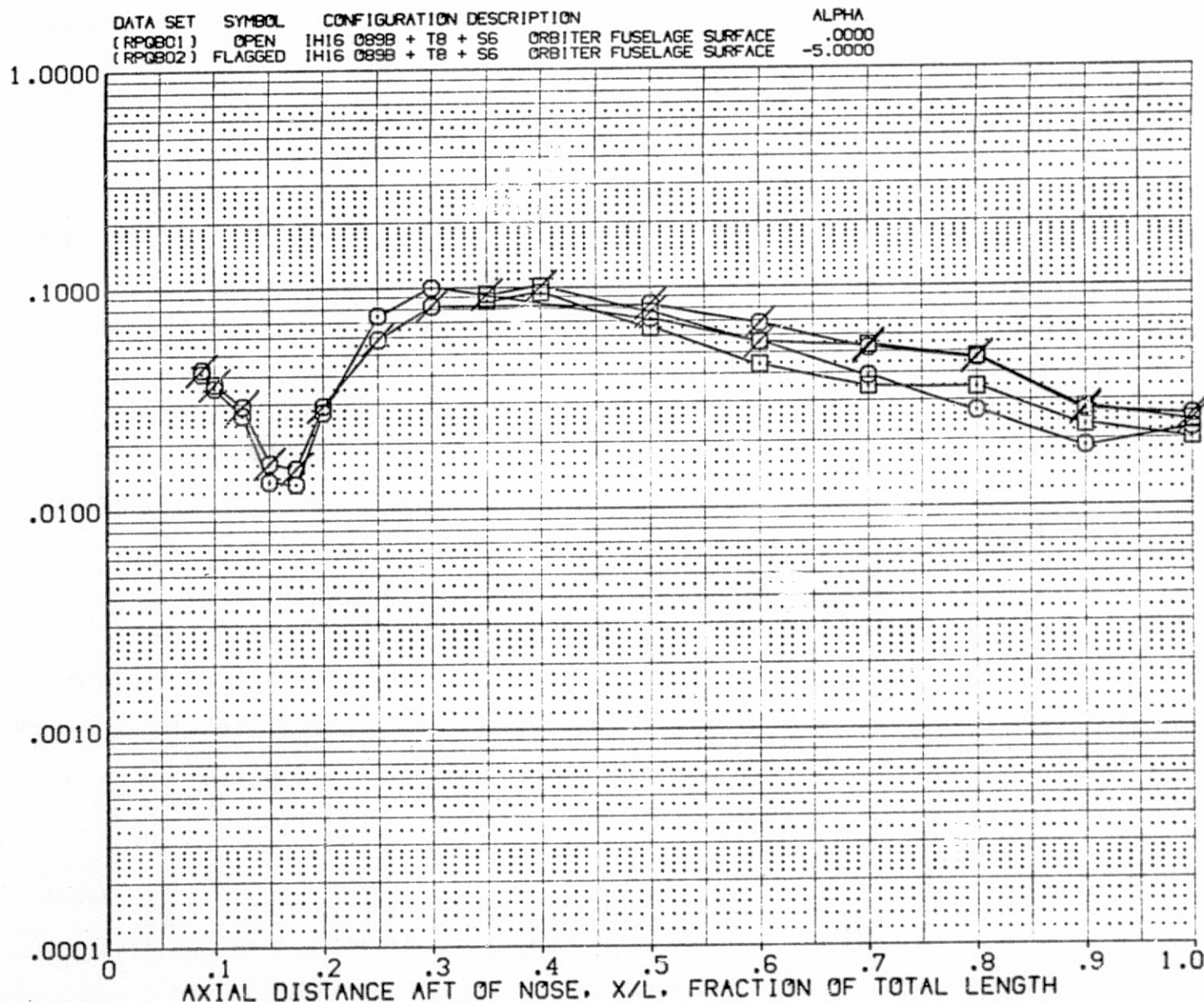


FIG. 10 INTEGRATED VEHICLE - ORBITER SURFACE ALPHA VARIATION RN/FT=5 DH=.175

SYMBOL 2Y/B HAW/HT RN/L  
 ○ .400 .900 4.570  
 □ .600  
 ◇ .800

PARAMETRIC VALUES  
 MACH 3.700 BETA .000  
 DELTAH .175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

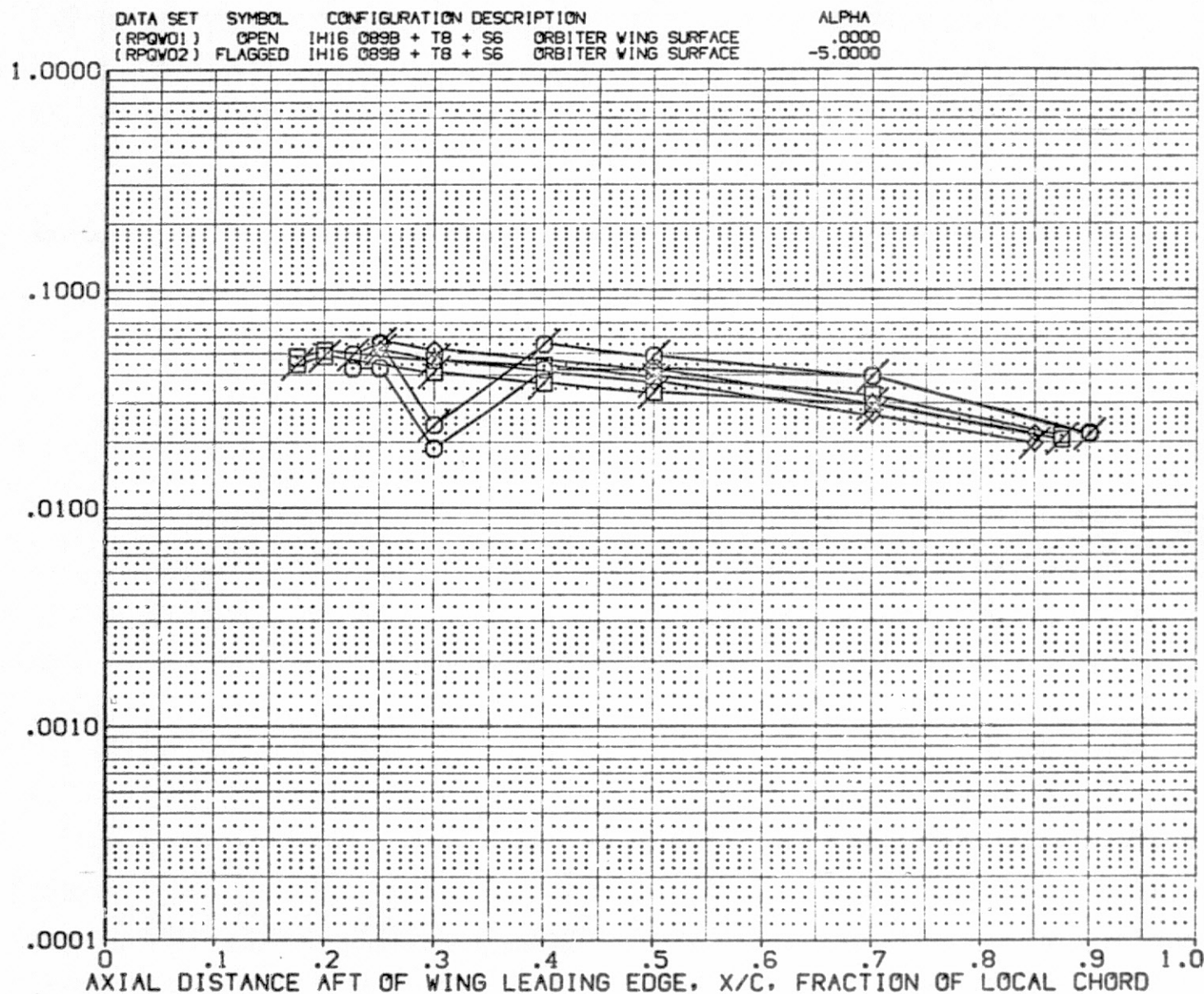


FIG. 10 INTEGRATED VEHICLE - ORBITER SURFACE ALPHA VARIATION RN/FT=5 DH=.175



SYMBOL Y(BP) HAV/HT RN/L  
 ○ .000  
 □ 70.000

PARAMETRIC VALUES  
 MACH 3.700 BETA .000  
 DELTAH .069

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

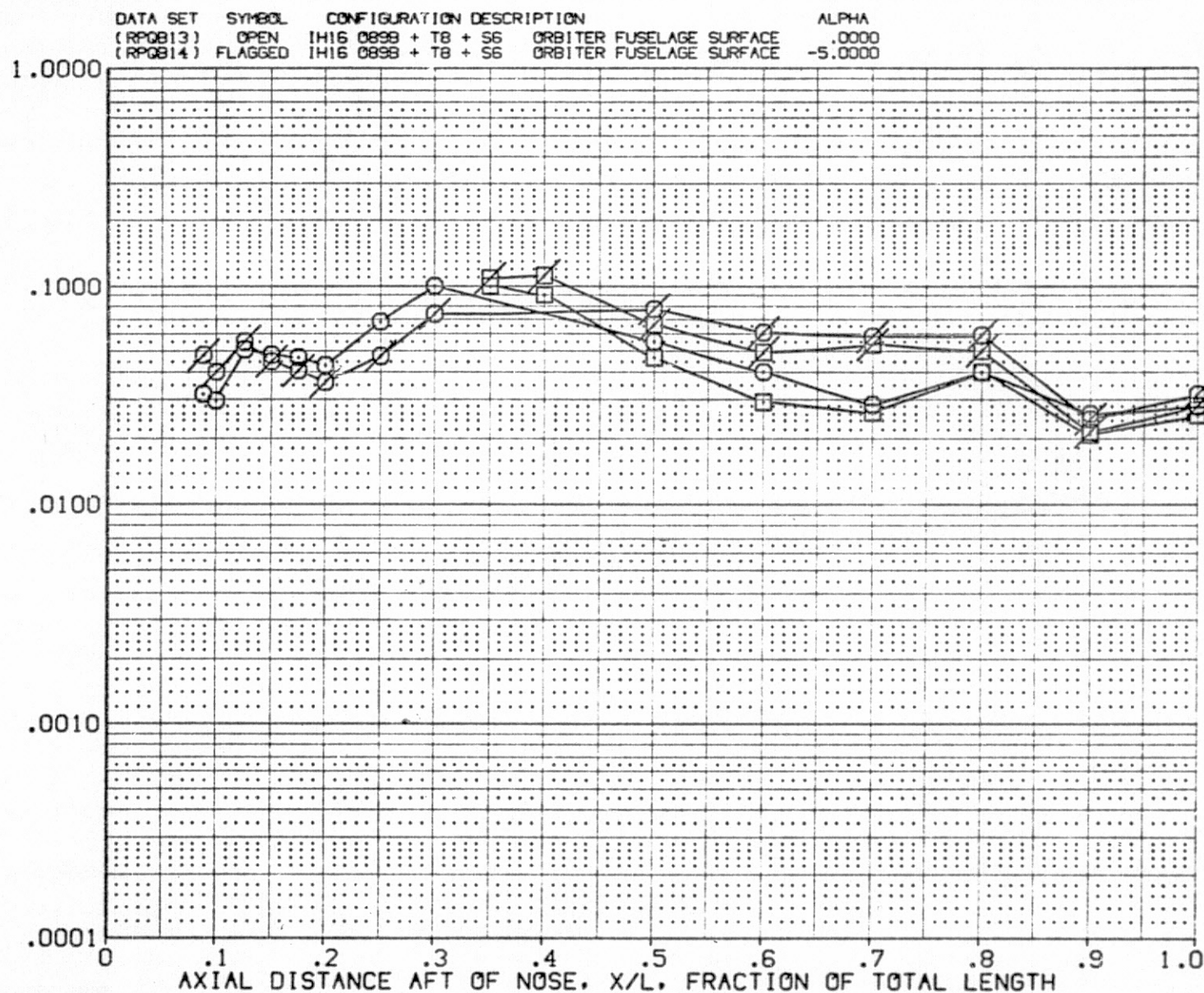


FIG. 11 INTEGRATED VEHICLE - ORBITER SURFACE ALPHA VARIATION RN/FT=5 DH=.069

SYMBOL 2Y/B HAV/HT RN/L  
 ○ .400  
 □ .600  
 ◇ .800

PARAMETRIC VALUES  
 MACH 3.700 BETA .000  
 DELTAH .069

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $H/H_{REF}$

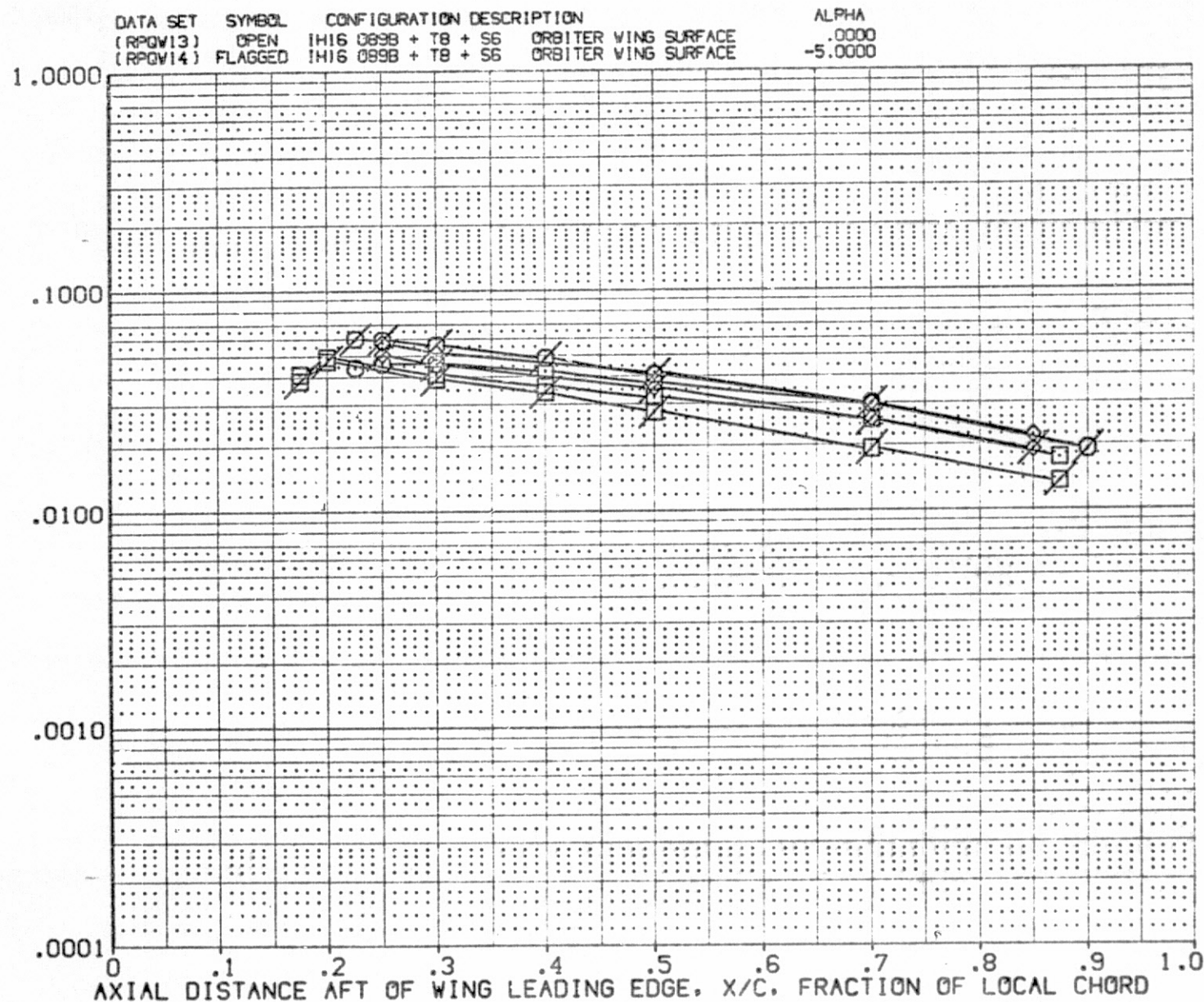


FIG. 11 INTEGRATED VEHICLE - ORBITER SURFACE ALPHA VARIATION RN/FT=5 DH=.069



SYMBOL Y(BP) HAW/HT RN/L  
 O .000 .900 1.910  
 □ 70.000

PARAMETRIC VALUES  
 MACH 3.700 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

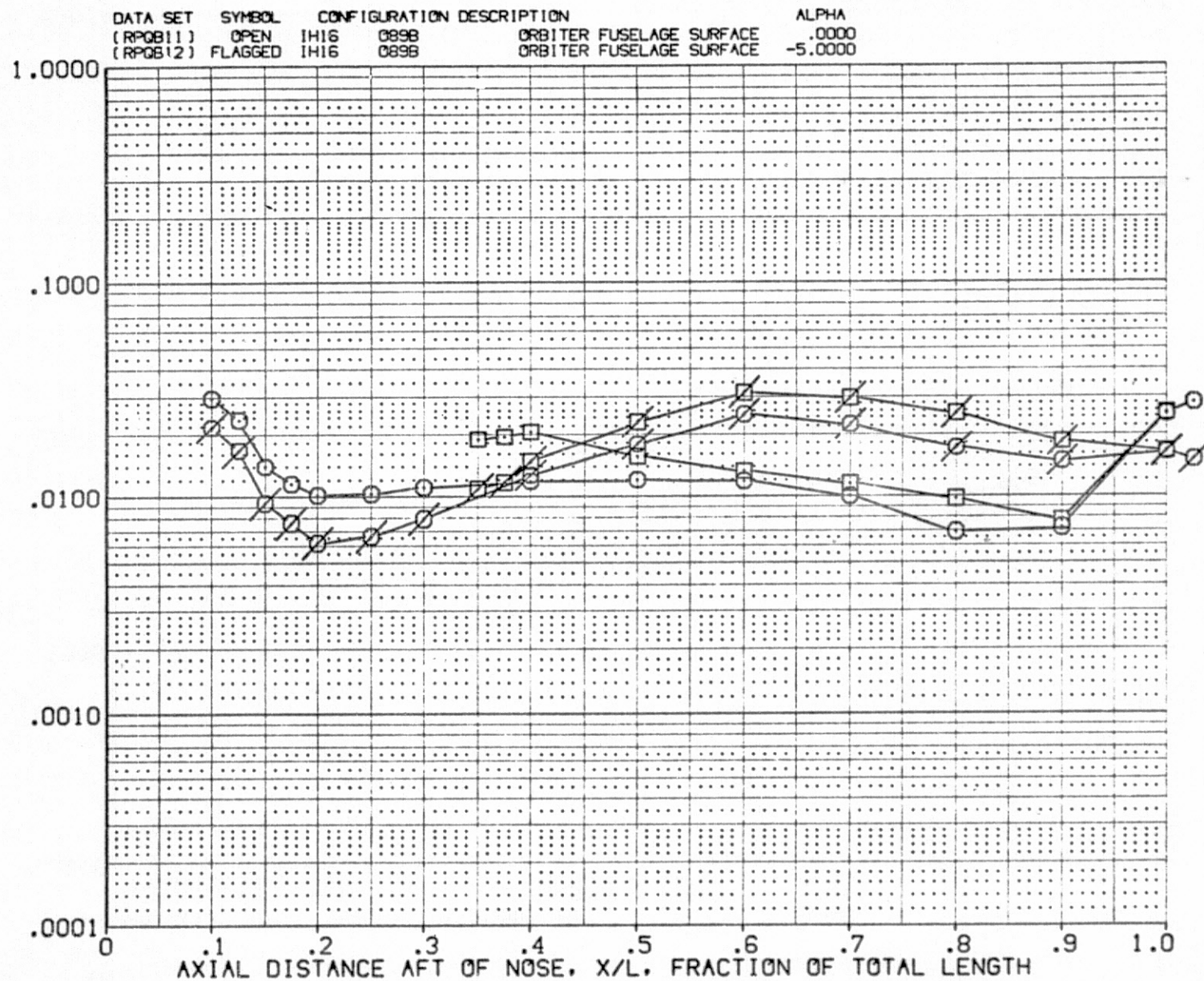


FIG. 12 ORBITER ALONE

ALPHA VARIATION RN/FT=2



SYMBOL 2Y/B HAW/HT RN/L  
 ○ .400  
 □ .600  
 ◇ .800

PARAMETRIC VALUES  
 MACH 3.700 BETA .000

DATA SET SYMBOL CONFIGURATION DESCRIPTION ALPHA  
 (RPQW11) OPEN IH16 0898 ORBITER WING SURFACE .0000  
 (RPQW12) FLAGGED IH16 0898 ORBITER WING SURFACE -5.0000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

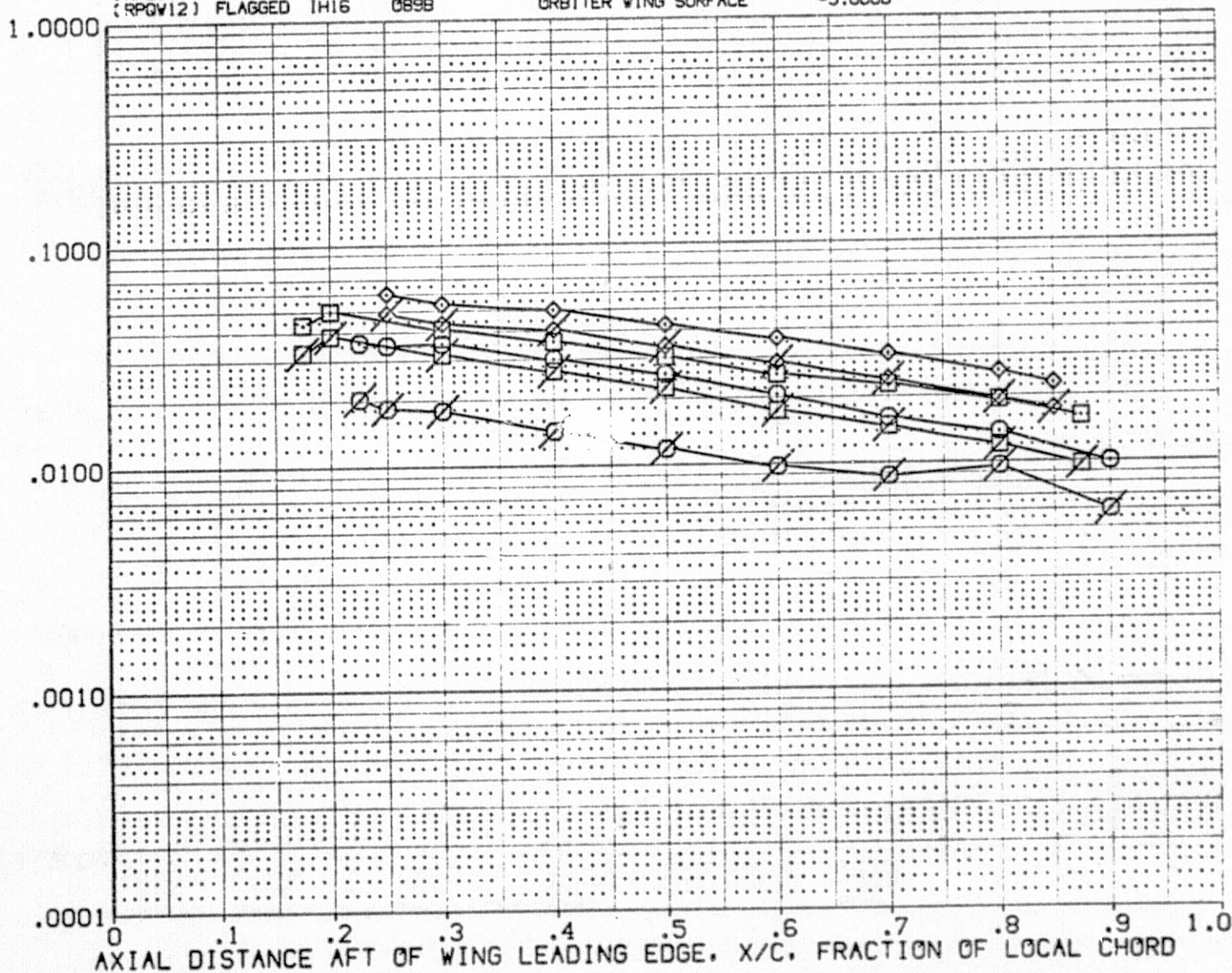


FIG. 12 ORBITER ALONE

ALPHA VARIATION RN/FT=2



SYMBOL Y(BP) HAW/HT RN/L  
 ○ .000 .900 4.540  
 □ 70.000

PARAMETRIC VALUES  
 MACH 3.700 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

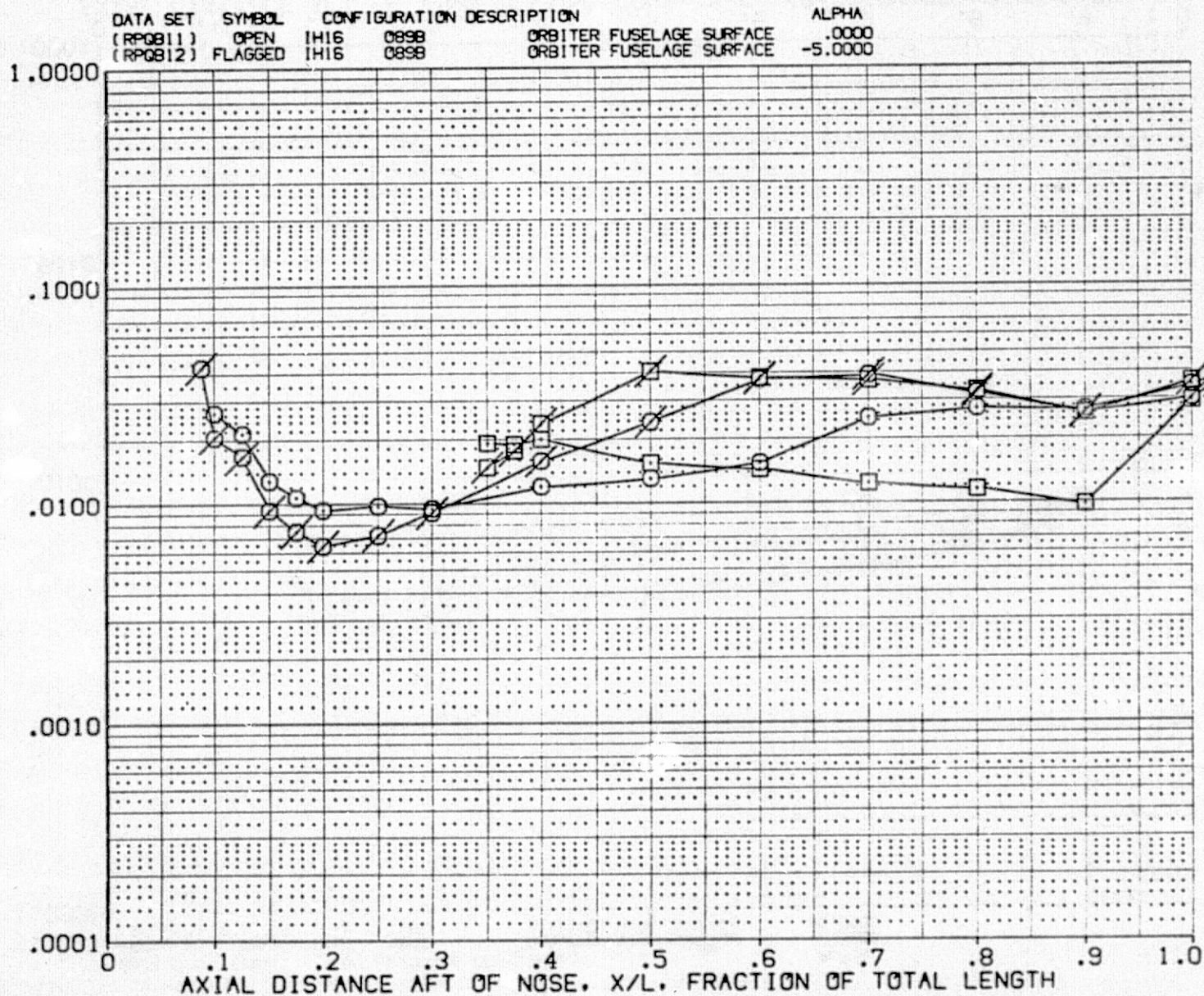


FIG. 13 ORBITER ALONE

ALPHA VARIATION RN/FT=5



SYMBOL	2Y/B	HAW/HT	RN/L
○	.400	.900	4.540
□	.600		
◇	.800		

PARAMETRIC VALUES		
MACH	3.700	BETA
		.000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

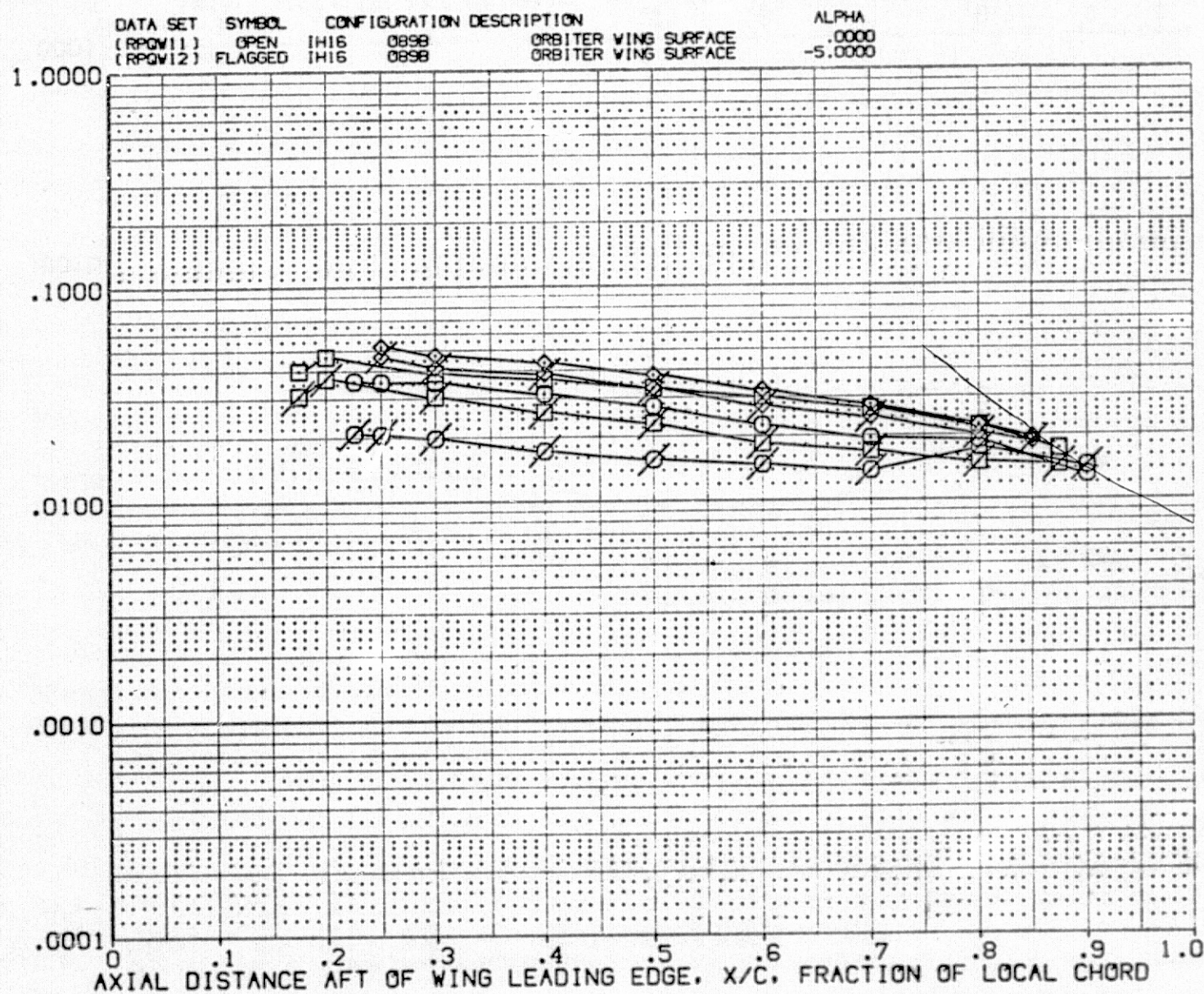


FIG. 13 ORBITER ALONE

ALPHA VARIATION RN/FT=5



SYMBOL	Y(BP)	HAW/HT	RN/L
○	.000	.850	1.930
□	70.000		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
ALPHA	.000
DELTA	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

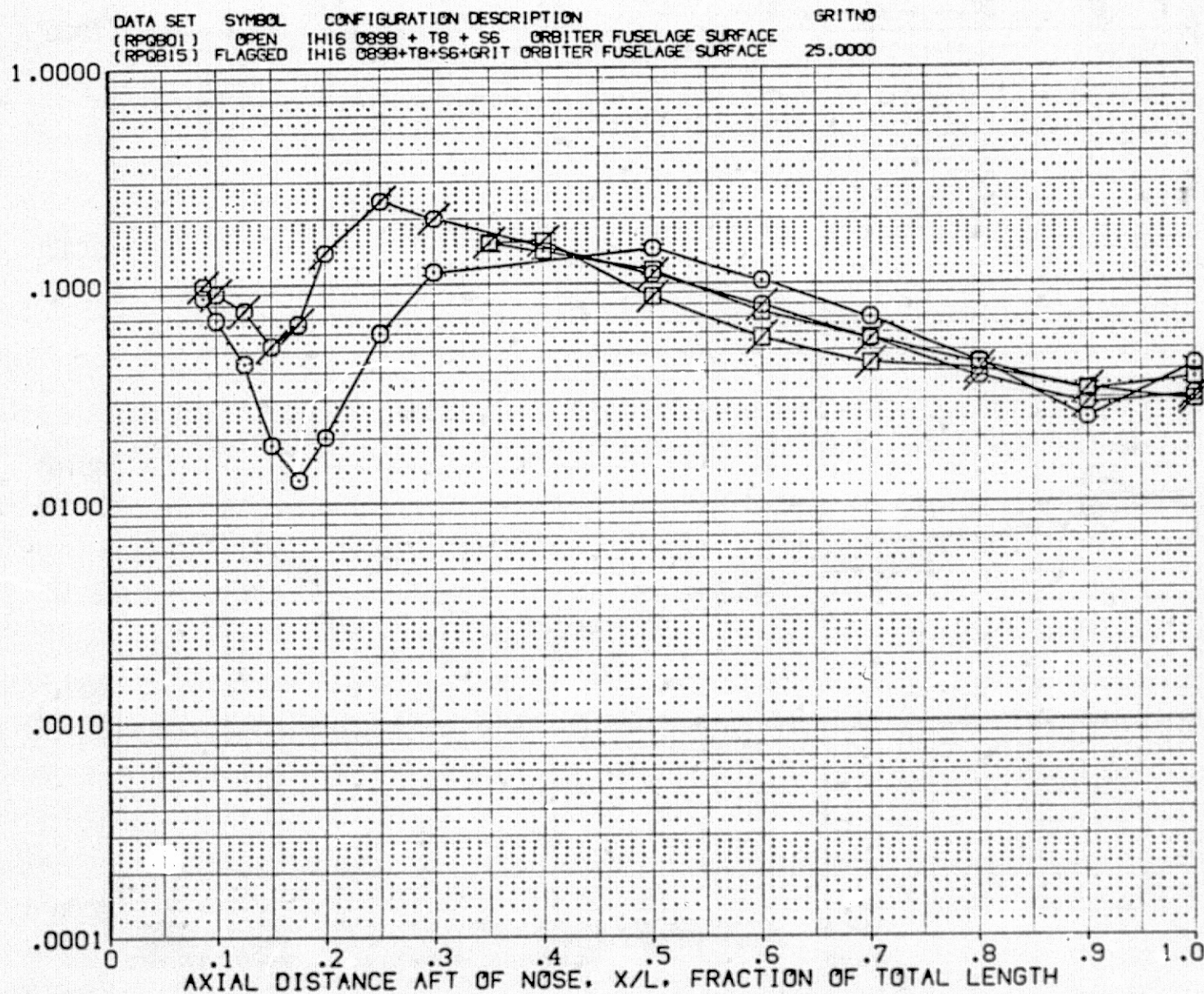


FIG. 14 INTEGRATED VEHICLE - ORBITER SURFACE GRIT EFFECT



SYMBOL Y(BP) HAW/HT RN/L  
 ○ .000 .900 1.930  
 □ 70.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000 DELTAH .175

DATA SET SYMBOL CONFIGURATION DESCRIPTION GRITNO  
 (RPO801) OPEN IH16 0898 + T8 + S6 ORBITER FUSELAGE SURFACE  
 (RPO815) FLAGGED IH16 0898+T8+S6+GRIT ORBITER FUSELAGE SURFACE 25.0000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

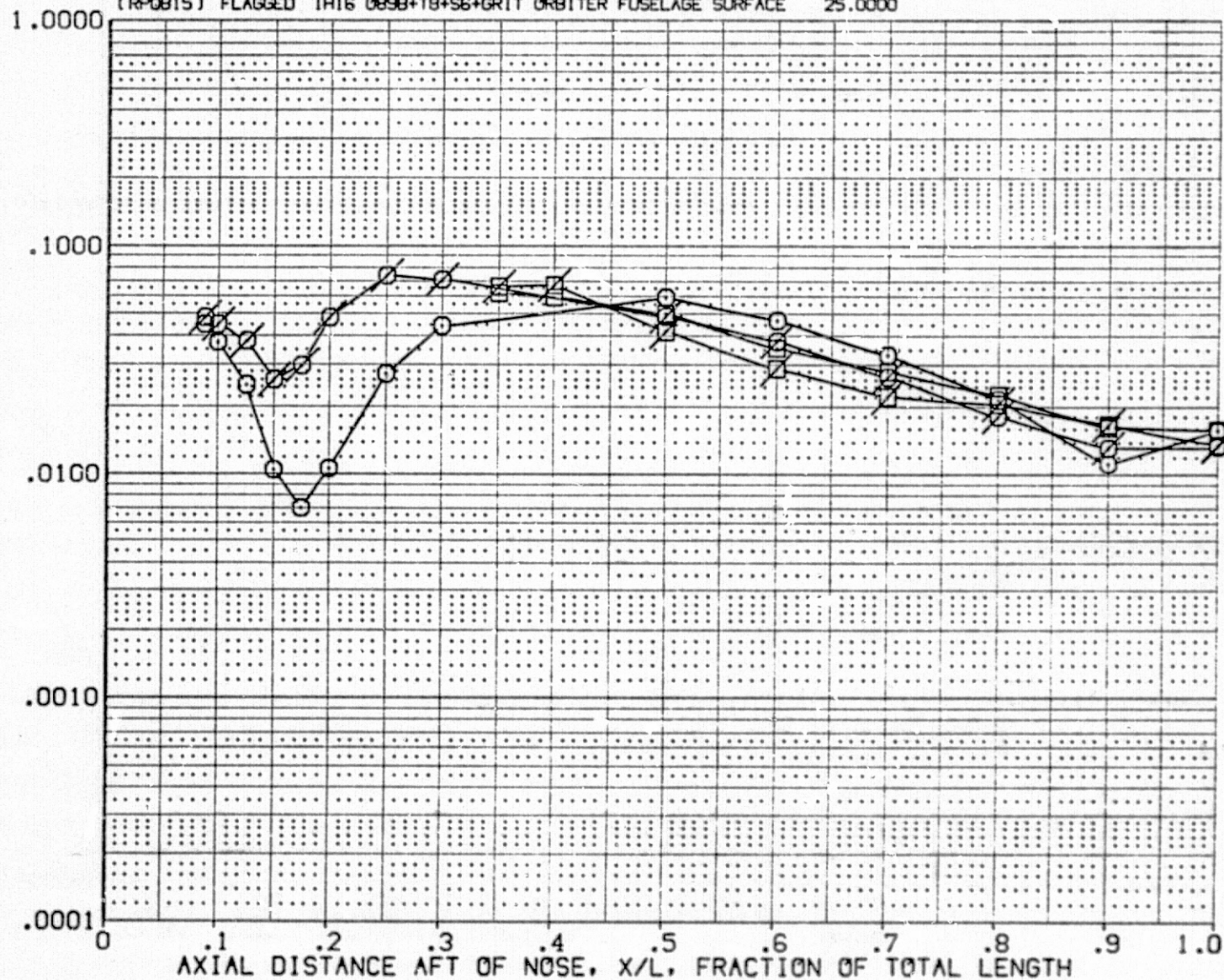


FIG. 14 INTEGRATED VEHICLE - ORBITER SURFACE GRIT EFFECT

SYMBOL	Y(BP)	HAW/HT	RN/L
○	.000	1.000	1.930
□	70.000		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
ALPHA	.000
DELTAH	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

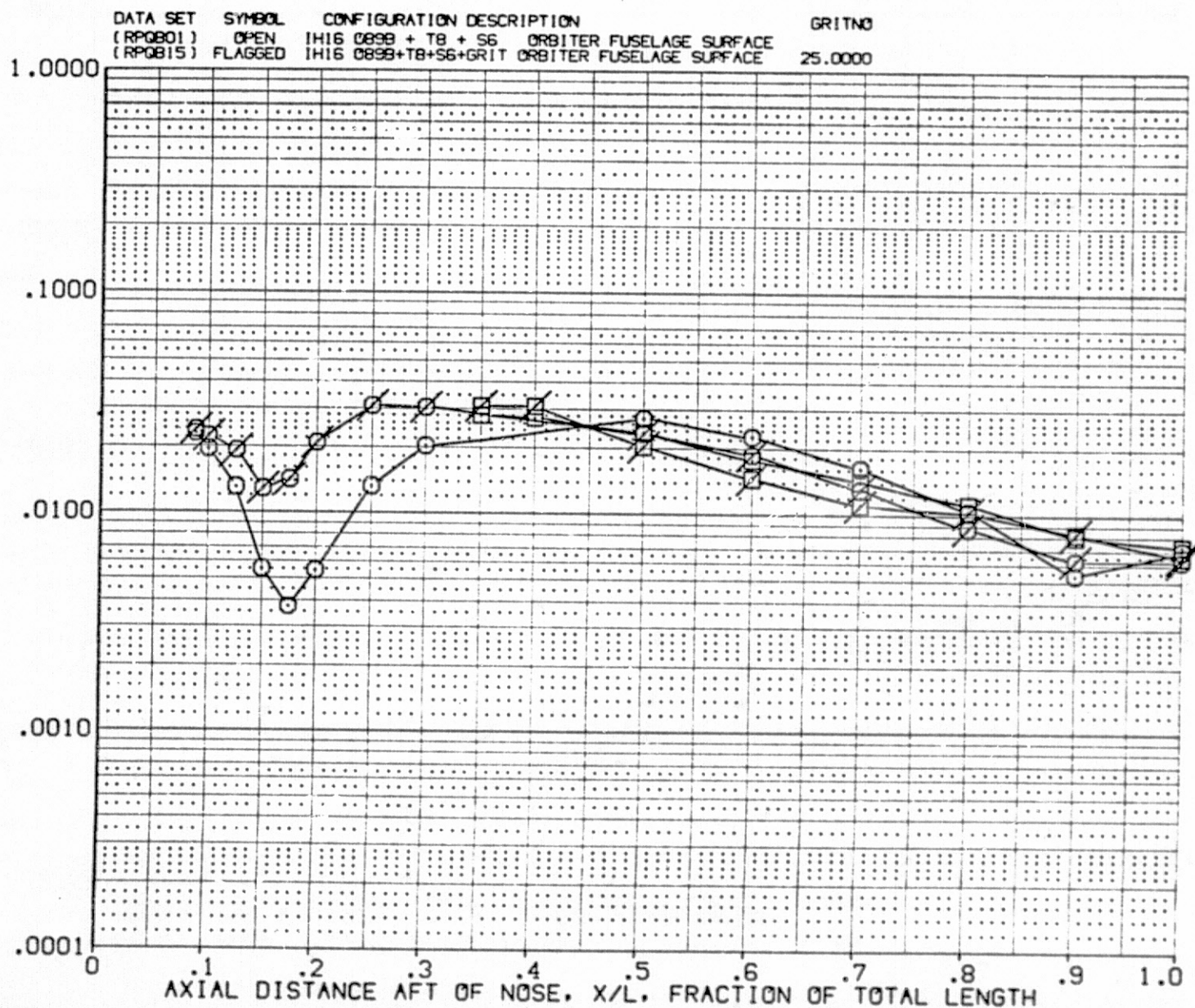


FIG. 14 INTEGRATED VEHICLE - ORBITER SURFACE GRIT EFFECT



SYMBOL Y(BP) HAW/HT RN/L  
 ○ .000 .850 4.570  
 □ 70.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000 DELTAH .175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

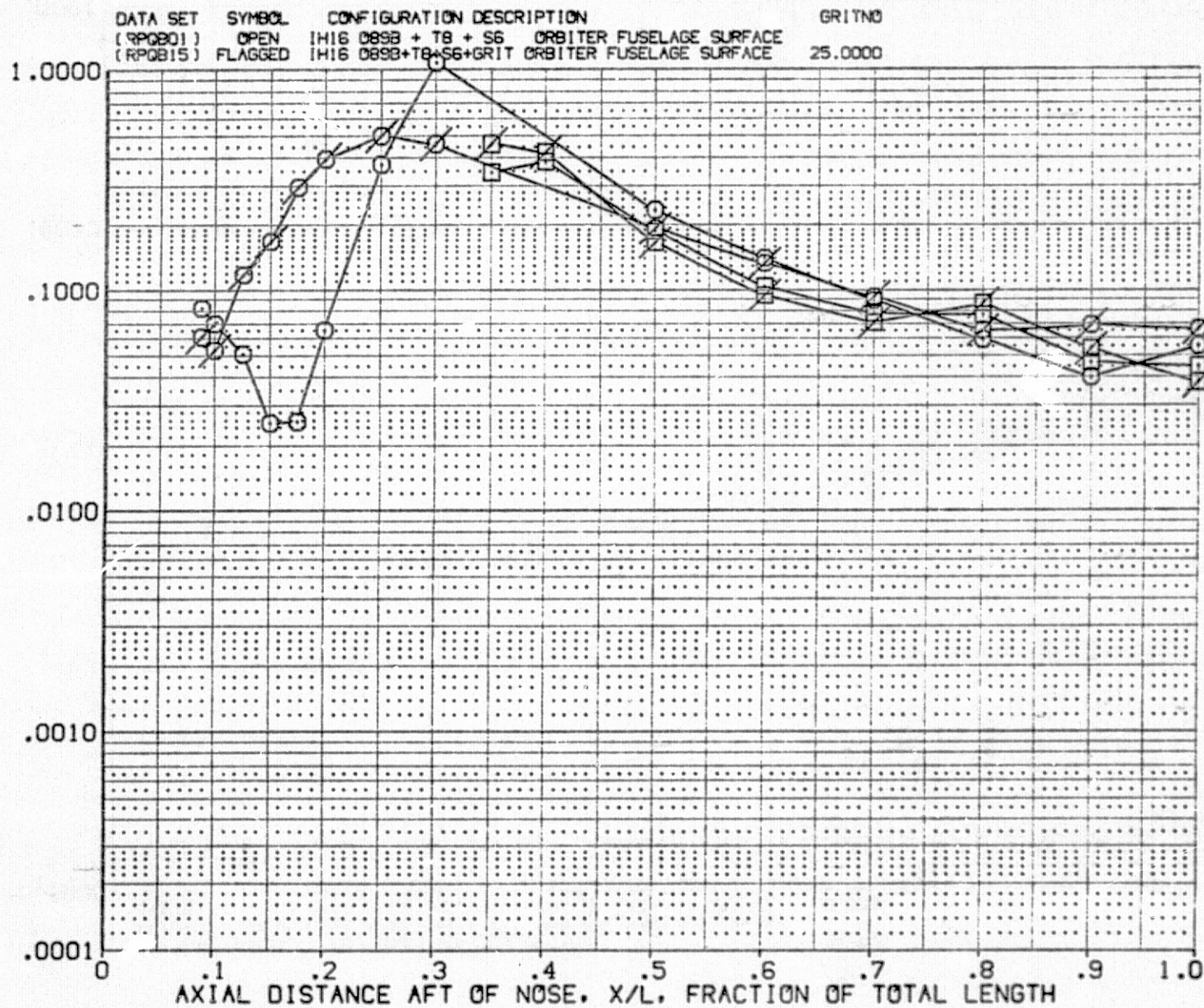


FIG. 14 INTEGRATED VEHICLE - ORBITER SURFACE GRIT EFFECT

SYMBOL	Y(BP)	HAW/HT	RN/L
○	.000	.900	4.570
□	70.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

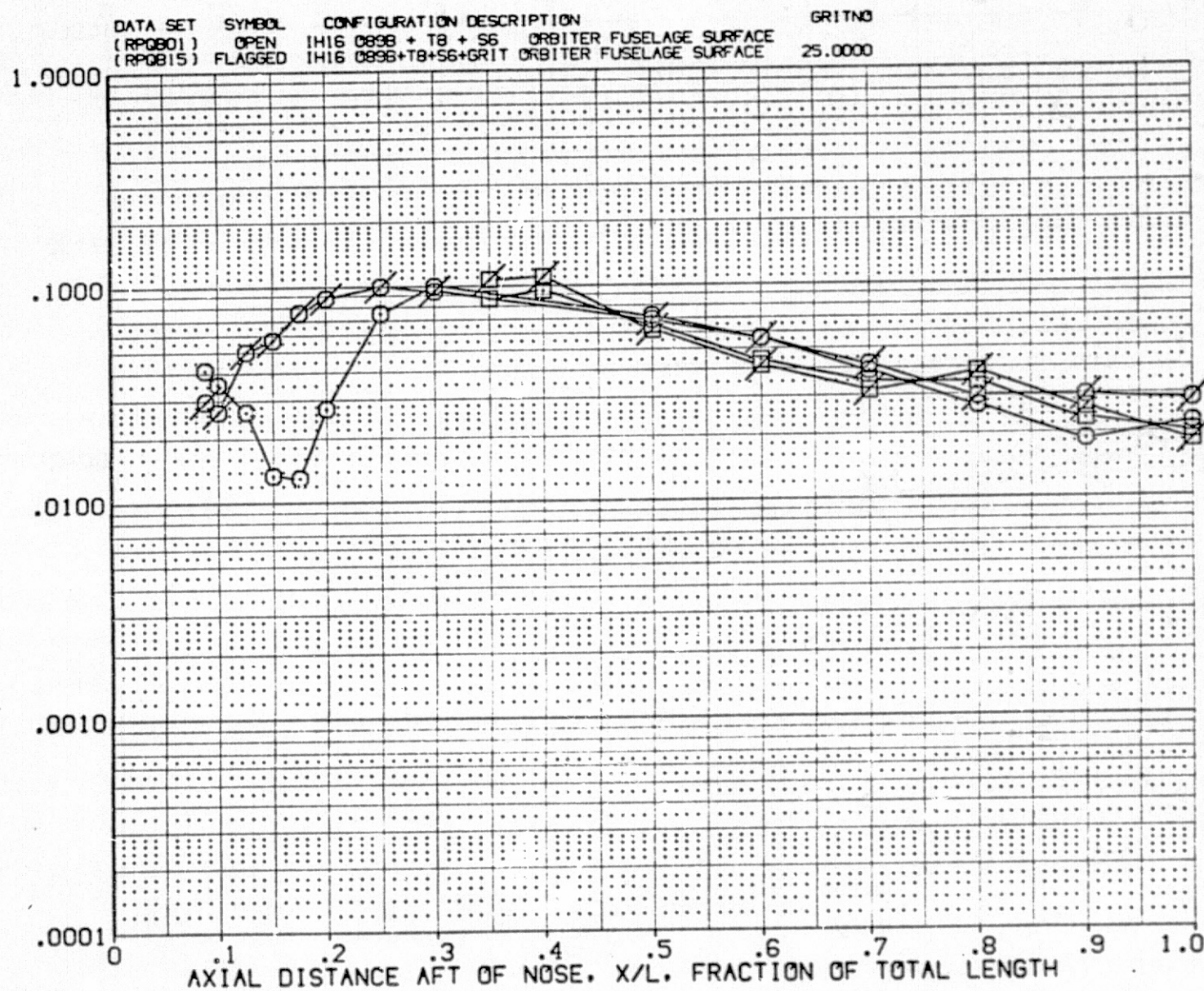


FIG. 14 INTEGRATED VEHICLE - ORBITER SURFACE GRIT EFFECT



SYMBOL Y(BP) HAW/HT RN/L  
 ○ .000 1.000 4.570  
 □ 70.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000 DELTAH .175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

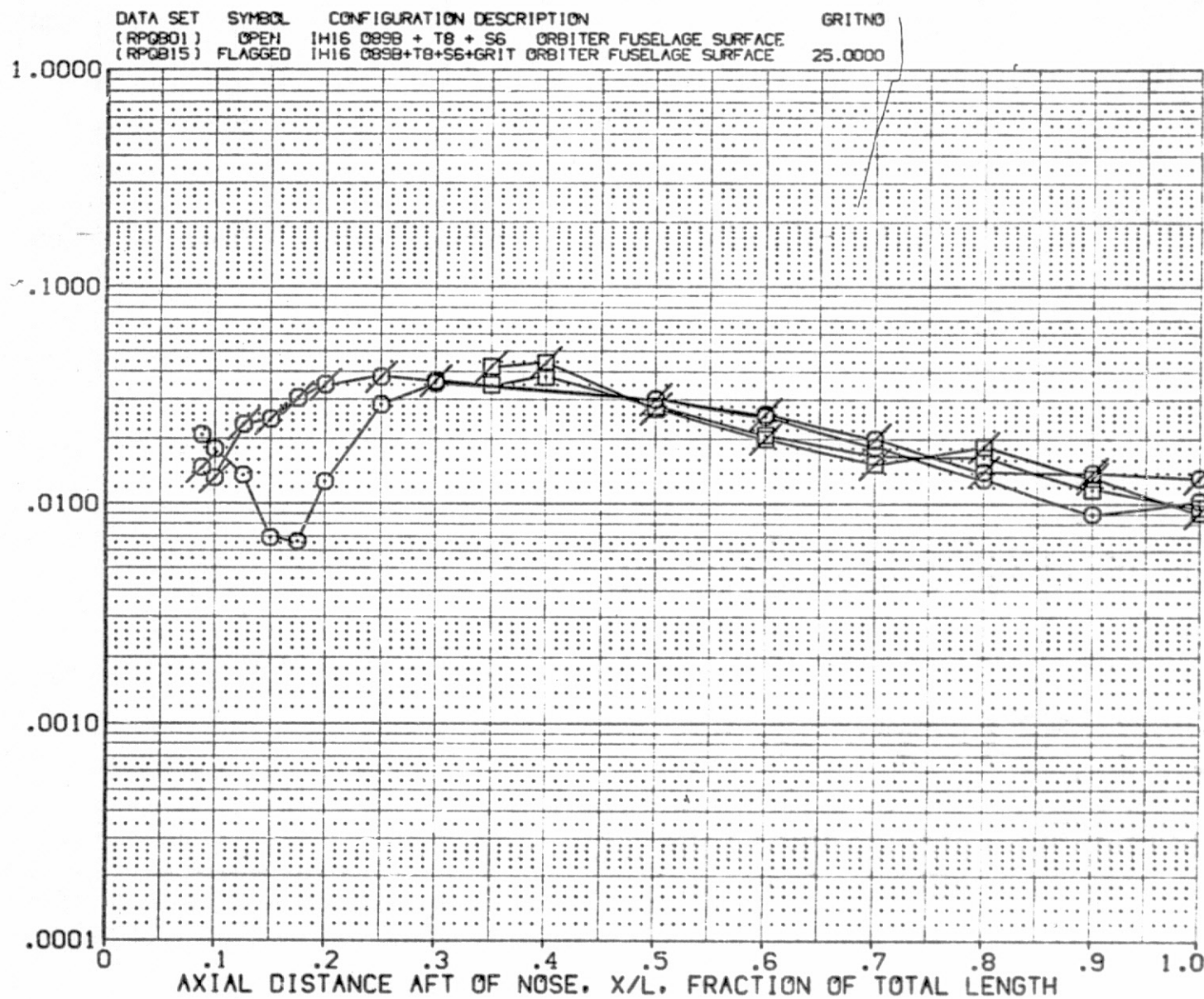


FIG. 14 INTEGRATED VEHICLE - ORBITER SURFACE GRIT EFFECT



SYMBOL 2Y/B HAW/HT RN/L  
 ○ .400 .850 1.930  
 □ .600  
 ◇ .800

MACH 3.700 ALPHA .000  
 BETA .000 DELTAH .175

DATA SET SYMBOL CONFIGURATION DESCRIPTION GRITNO  
 (RPQV01) OPEN IH16 089B + T8 + S6 ORBITER WING SURFACE  
 (RPQV15) FLAGGED IH16 089B+T8+S6+GRIT ORBITER WING SURFACE 25.0000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

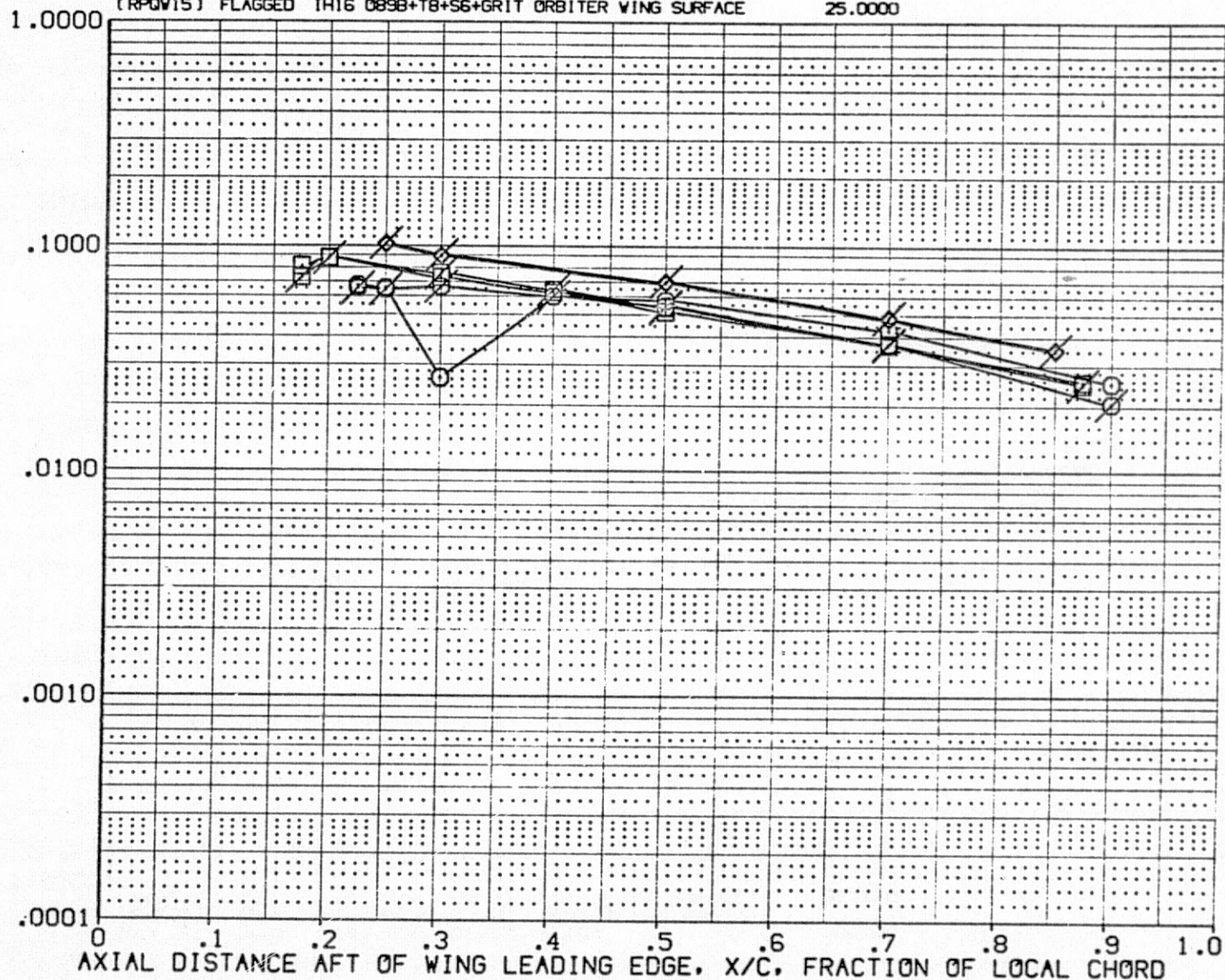


FIG. 14 INTEGRATED VEHICLE - ORBITER SURFACE GRIT EFFECT

SYMBOL	2Y/B	HAW/HT	RN/L
□	.400	.900	1.930
◇	.600		
◇	.800		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
ALPHA	.000
DELTAH	.175

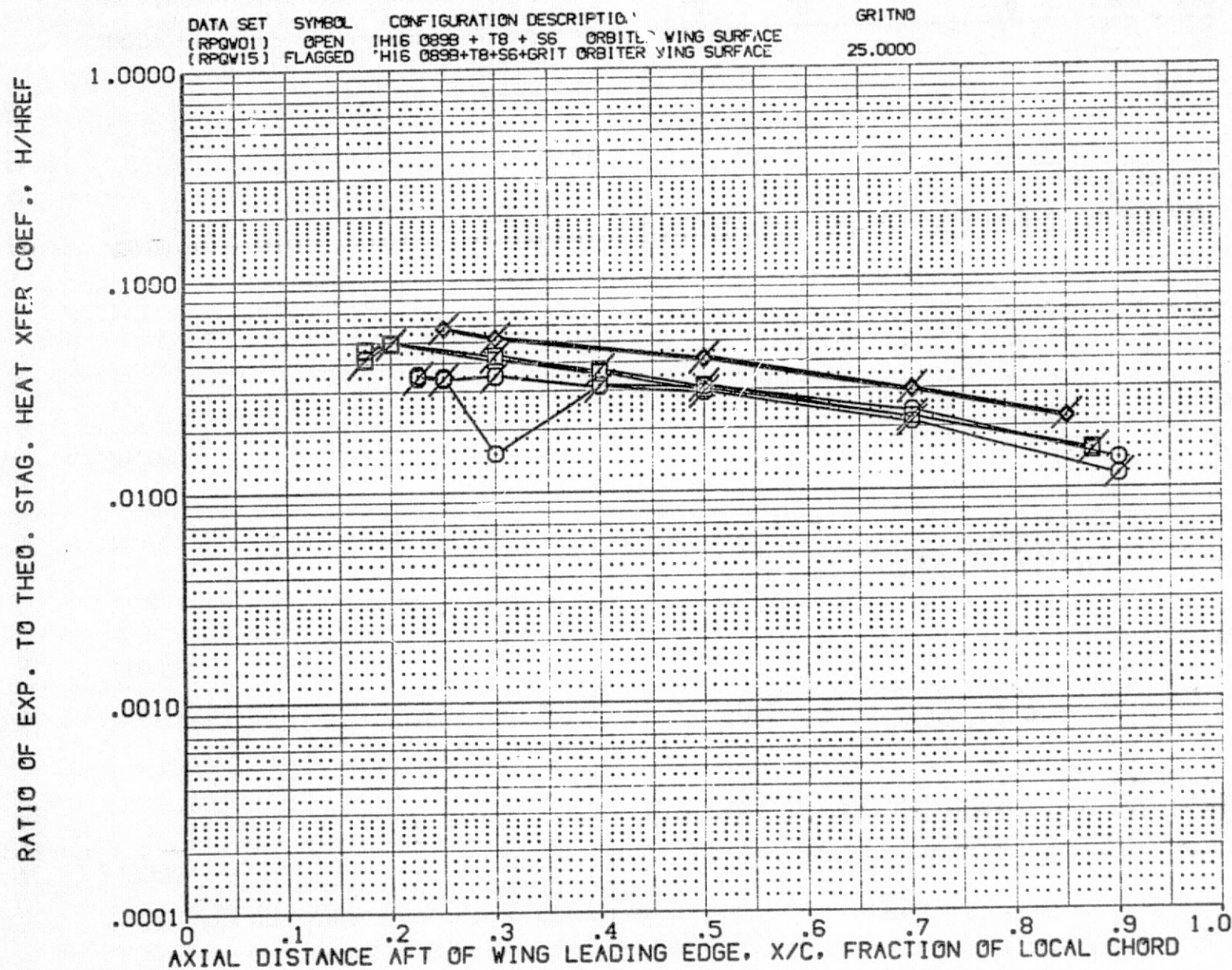


FIG. 14 INTEGRATED VEHICLE - ORBITER SURFACE GRIT EFFECT



SYMBOL	2Y/B	HAW/HT	RN/L
○	.400	1.000	1.930
□	.600		
◇	.800		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
ALPHA	.000
DELTAH	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

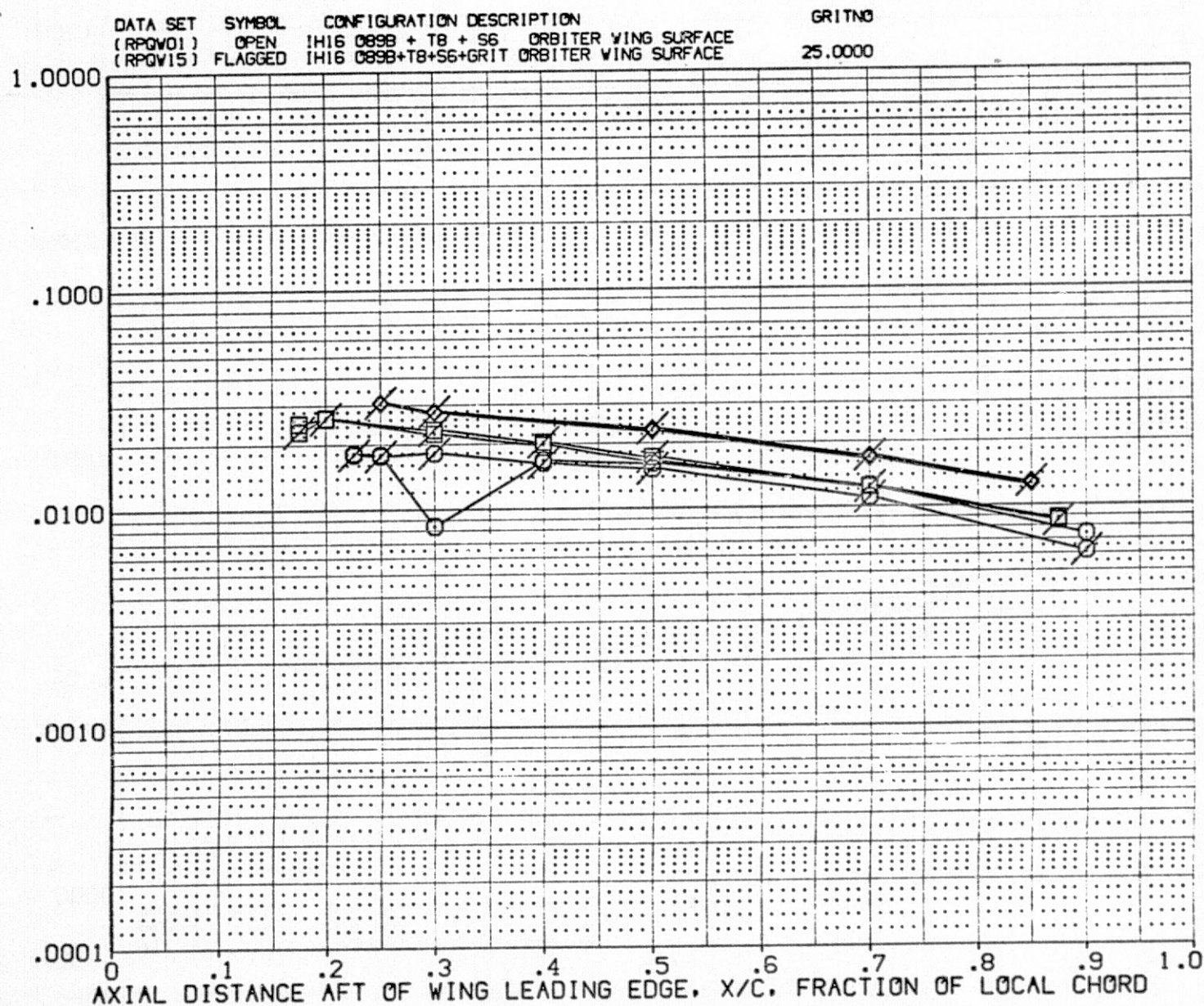


FIG. 14 INTEGRATED VEHICLE - ORBITER SURFACE GRIT EFFECT



SYMBOL	2Y/B	HAW/HT	RN/L
○	.400	.850	4.570
□	.600		
◇	.800		

		PARAMETRIC VALUES	
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

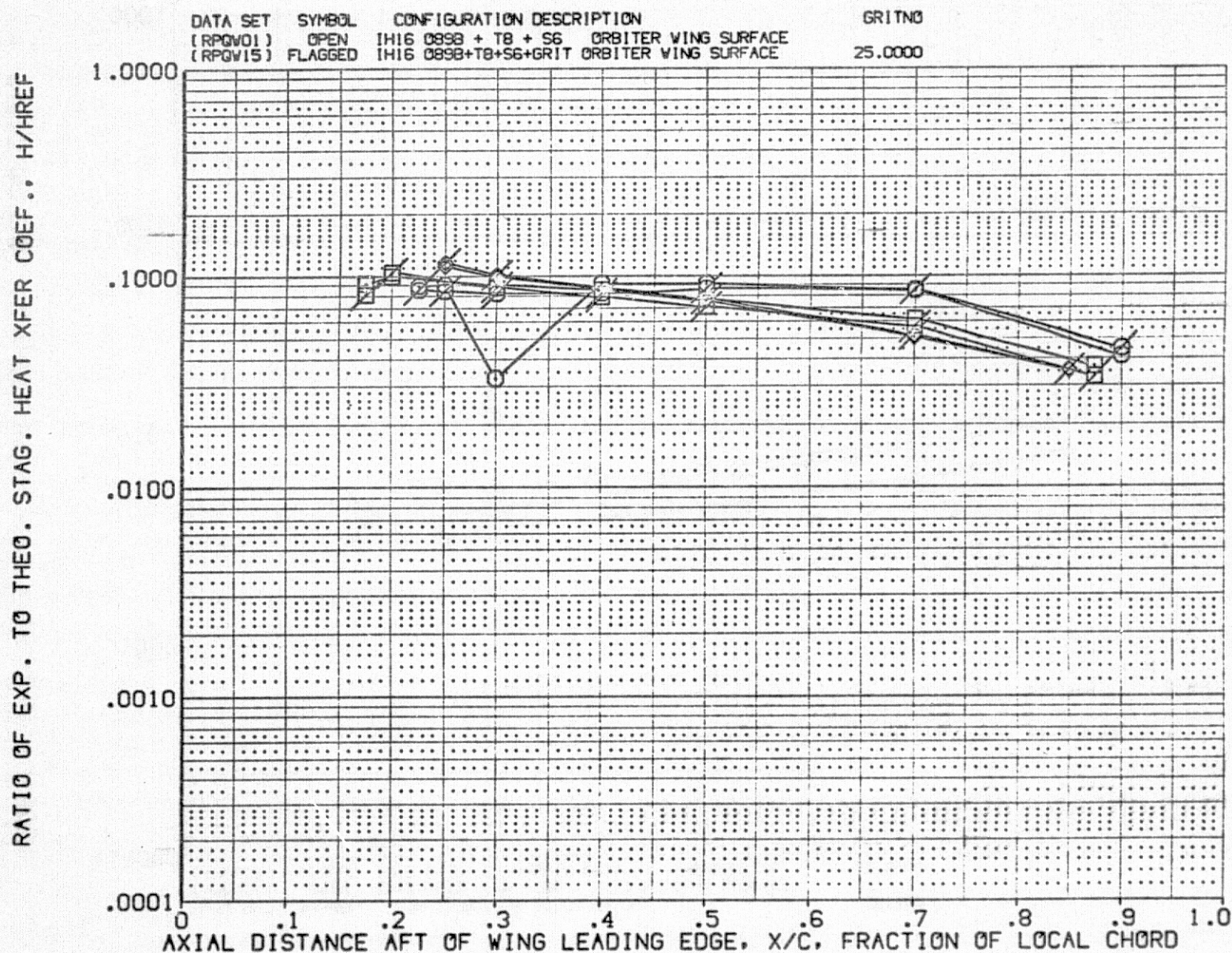


FIG. 14 INTEGRATED VEHICLE - ORBITER SURFACE GRIT EFFECT



SYMBOL	2Y/B	HAW/HT	RN/L
○	.400	.900	4.570
□	.600		
◇	.800		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

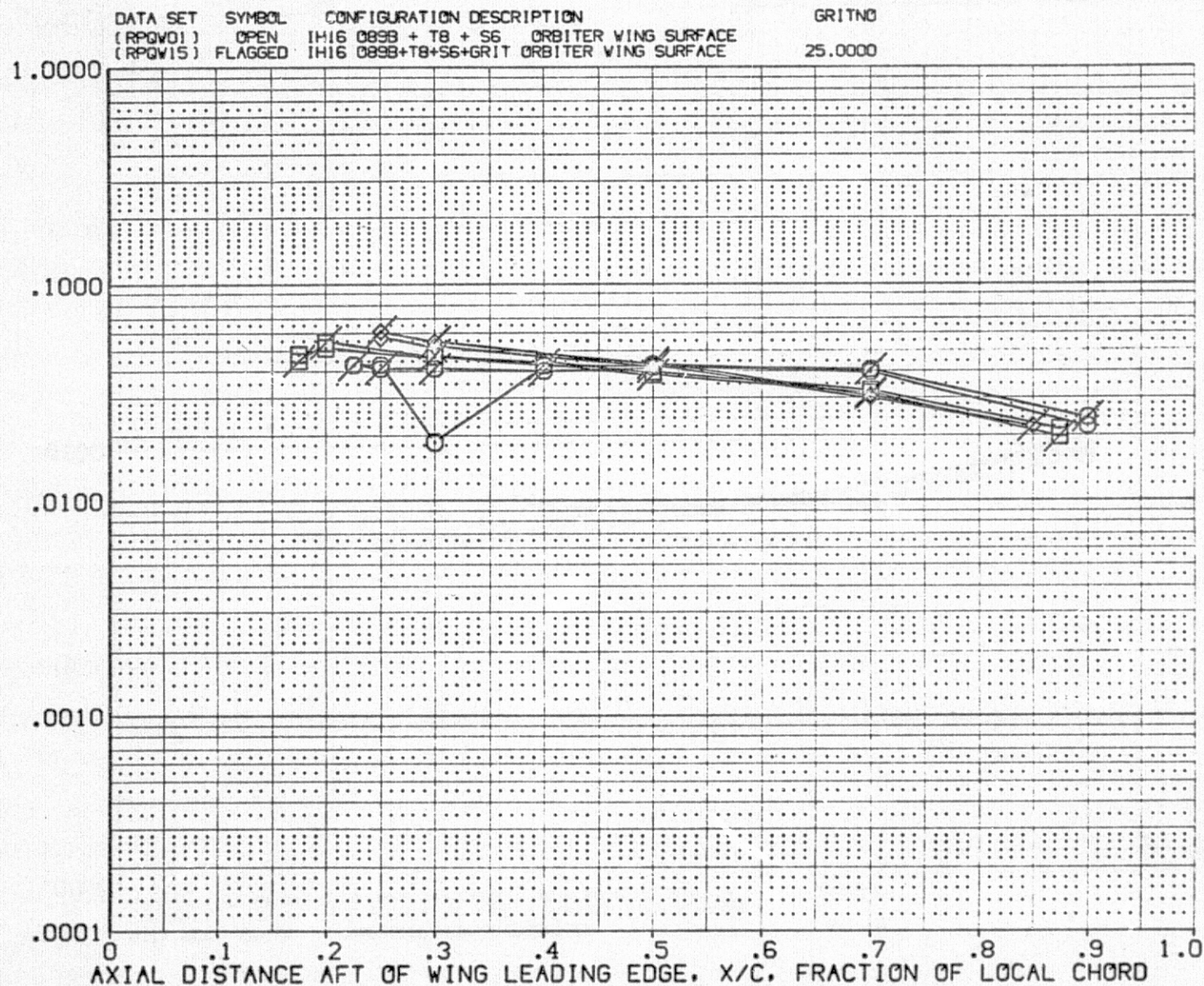


FIG. 14 INTEGRATED VEHICLE - ORBITER SURFACE GRIT EFFECT



SYMBOL	2Y/B	HAW/HT	RN/L
○	.400	1.000	4.570
□	.600		
◇	.800		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
ALPHA	.000
DELTAH	.175

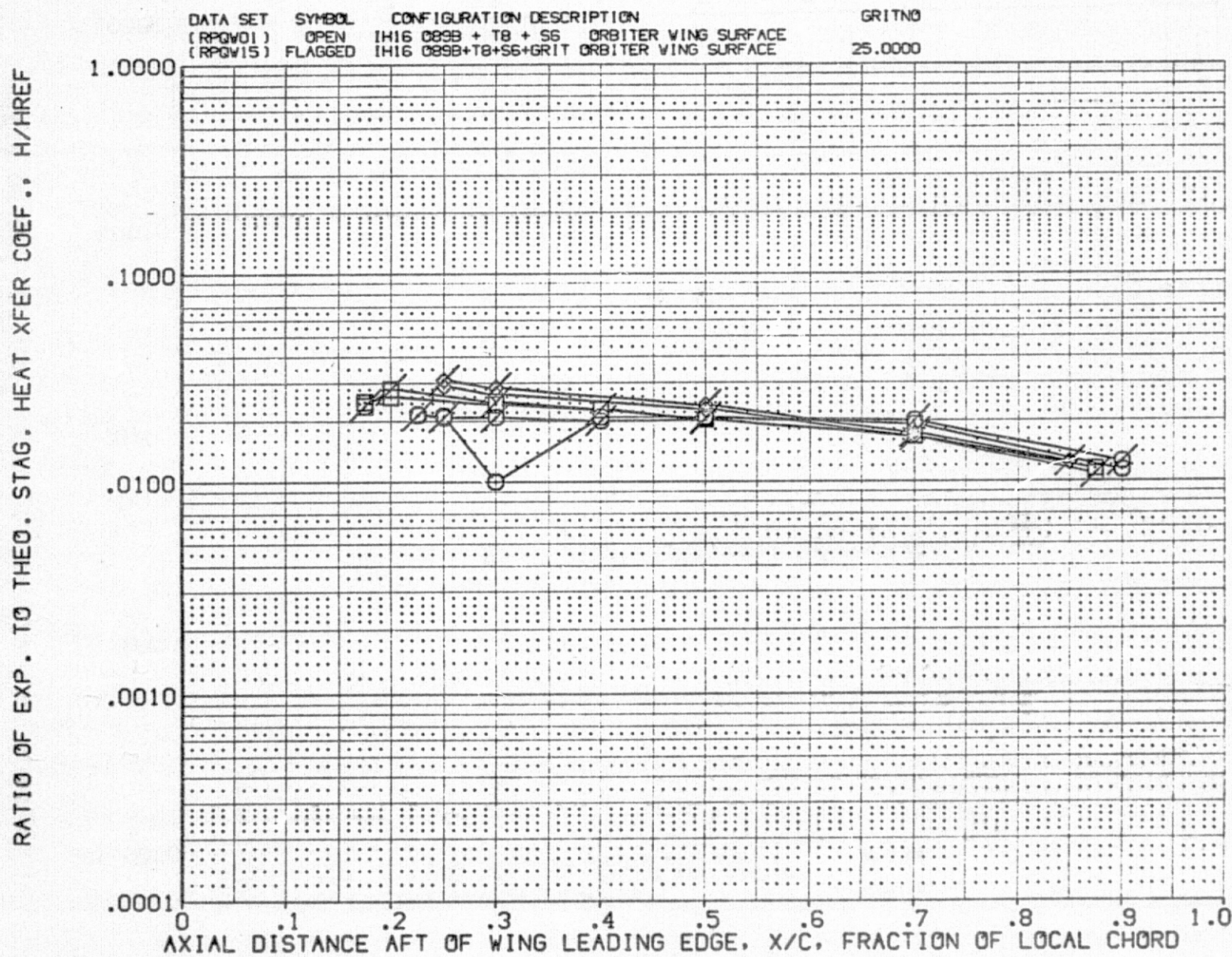


FIG. 14 INTEGRATED VEHICLE - ORBITER SURFACE GRIT EFFECT





SYMBOL Y(BP) HAW/HT RN/L  
○ .000 .850 1.910  
□ 70.000

PARAMETRIC VALUES  
MACH 3.700 ALPHA .000  
BETA .000

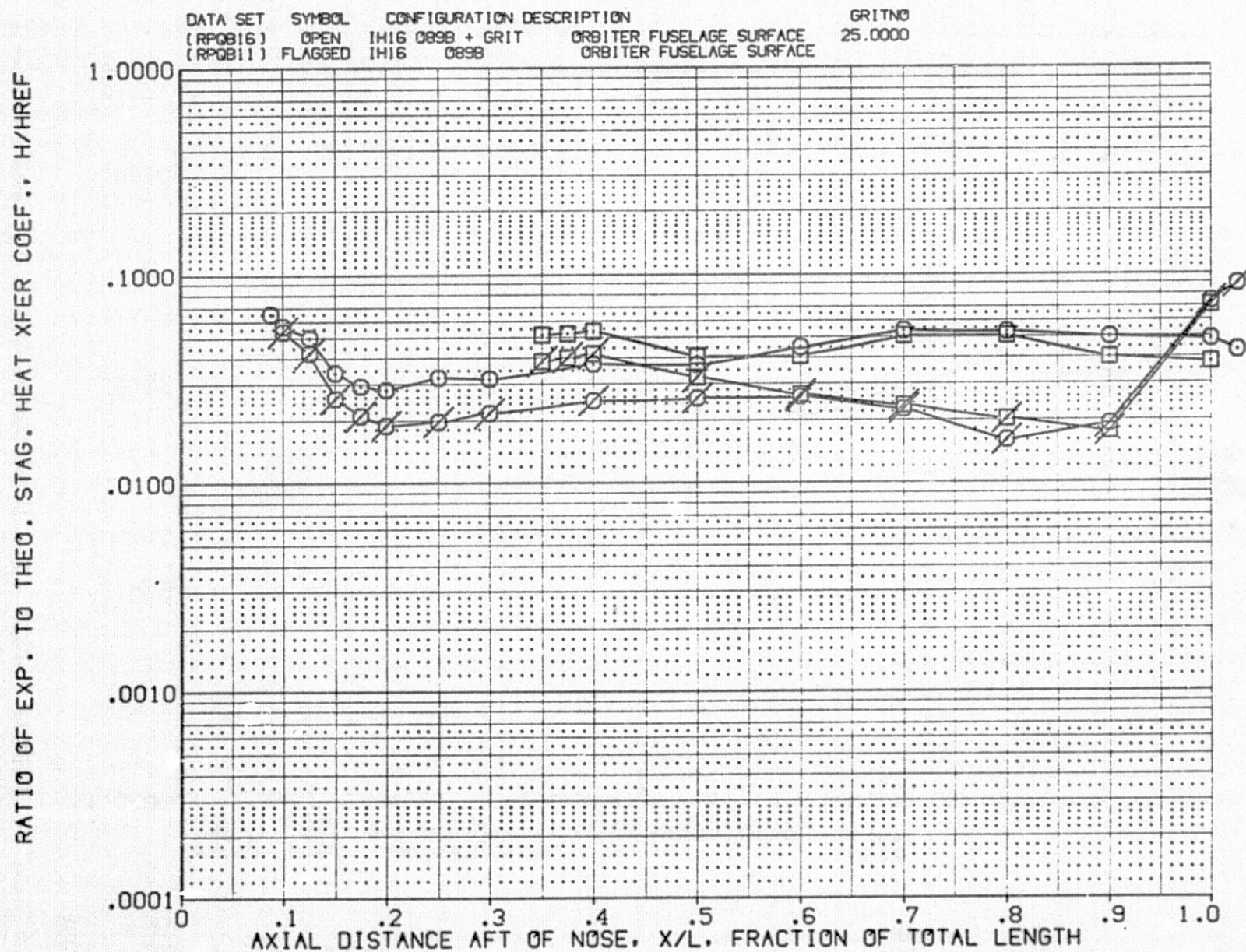


FIG. 15 ORBITER ALONE

GRIT EFFECT



SYMBOL Y(BP) HAW/HT RN/L  
 O .000 .900 1.910  
 □ 70.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

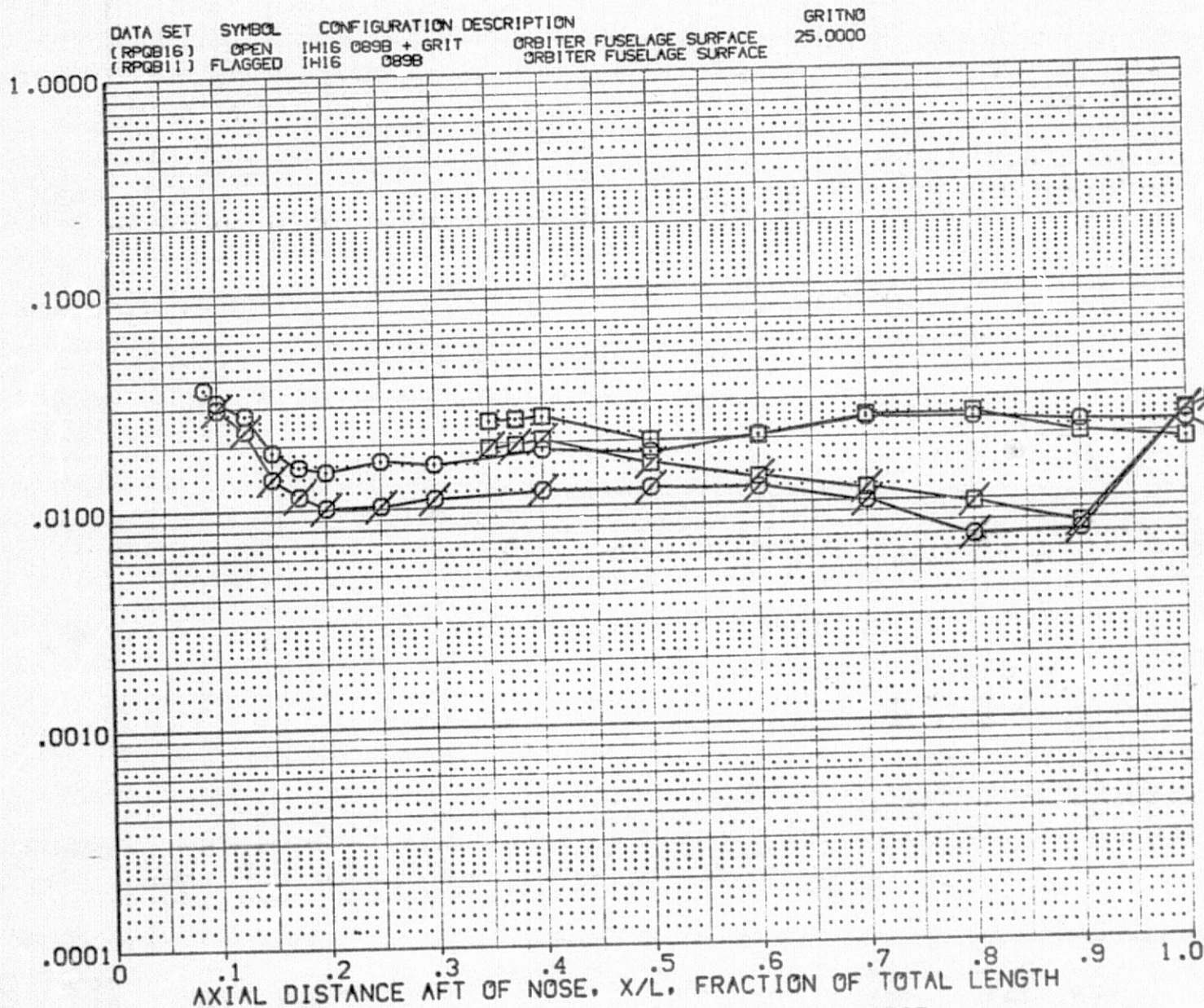


FIG. 15 ORBITER ALONE

GRIT EFFECT



SYMBOL	Y(BP)	HAW/HT	RN/L
○	.000	1.000	1.910
□	70.000		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
ALPHA	.000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

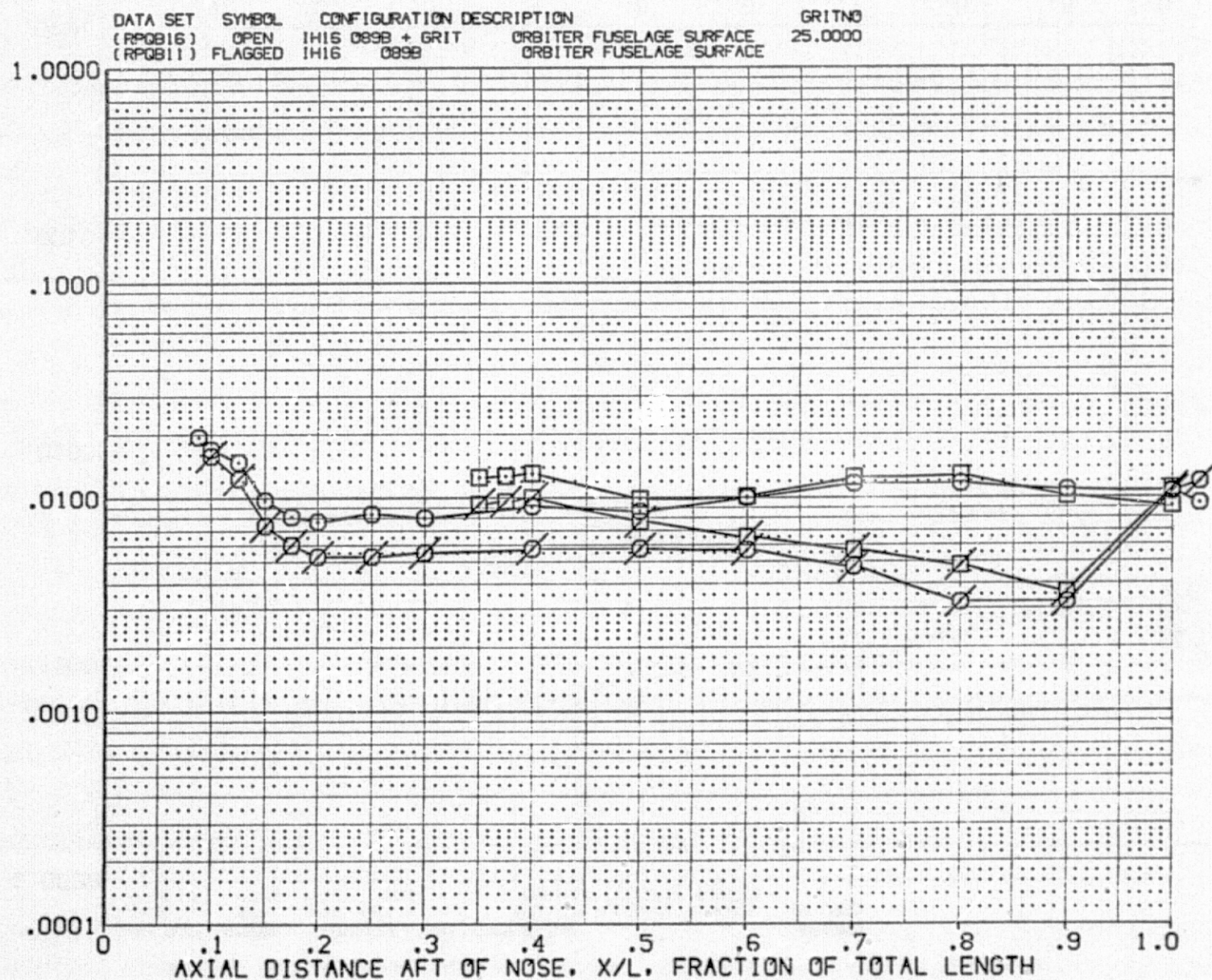


FIG. 15 ORBITER ALONE

GRIT EFFECT



SYMBOL Y(BP) HAW/HT RN/L  
 ○ .000 .850 4.570  
 □ 70.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

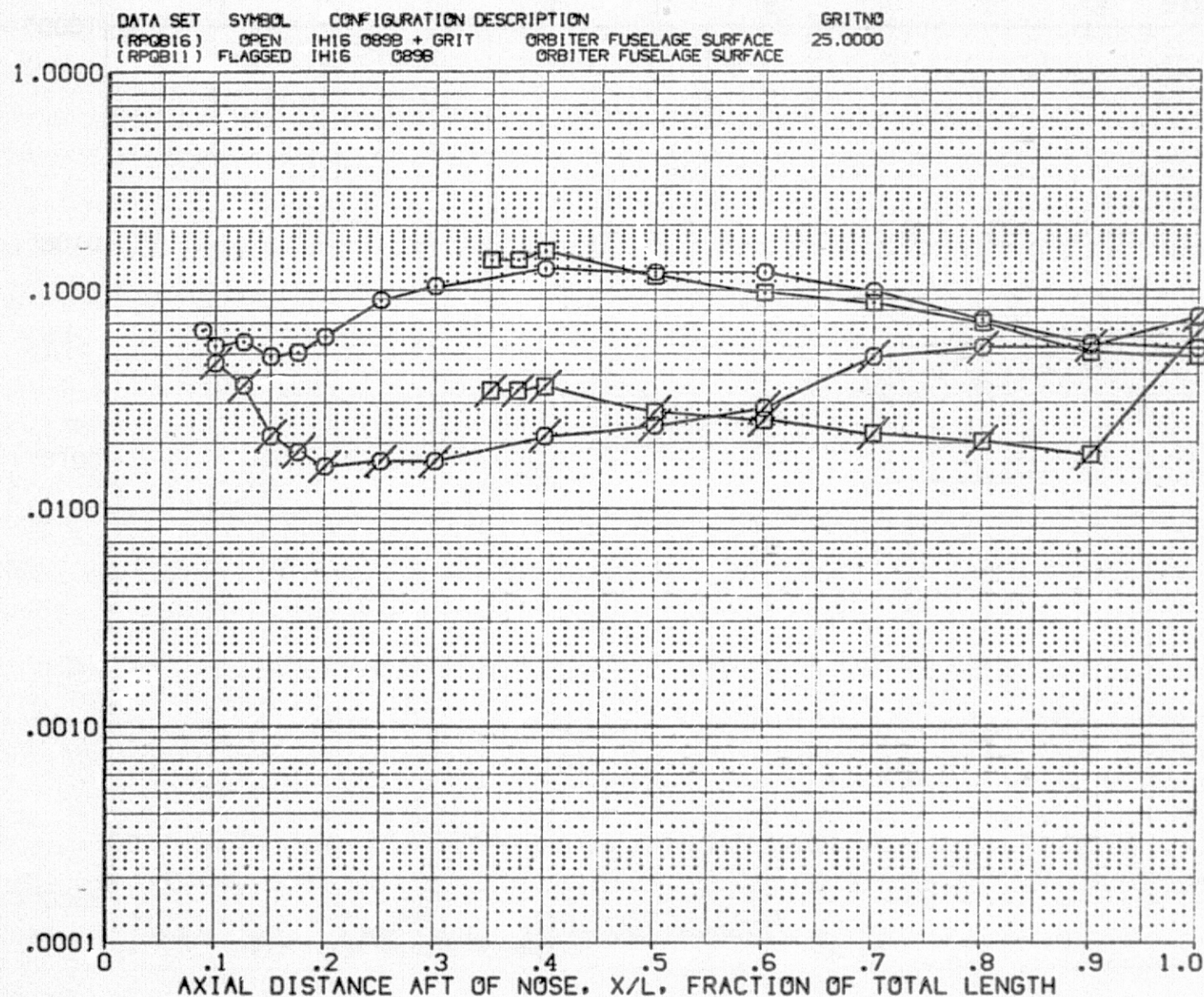


FIG. 15 ORBITER ALONE

GRIT EFFECT

SYMBOL Y(BP) HAV/HT RN/L  
 ○ .000 .900 4.570  
 □ 70.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

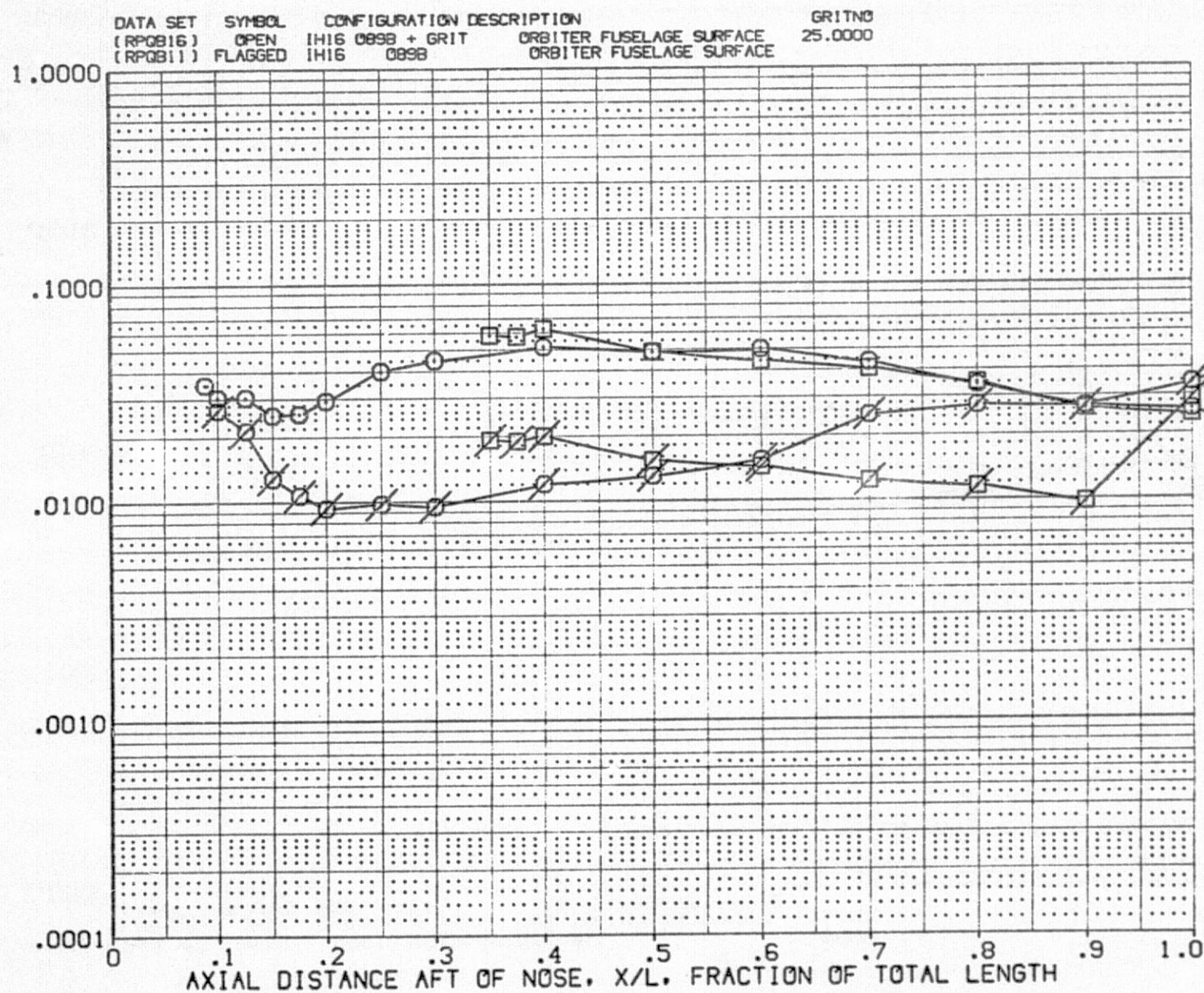


FIG. 15 ORBITER ALONE

GRIT EFFECT



SYMBOL Y(BP) HAV/HT RN/L  
 ○ .000 1.000 4.570  
 □ 70.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

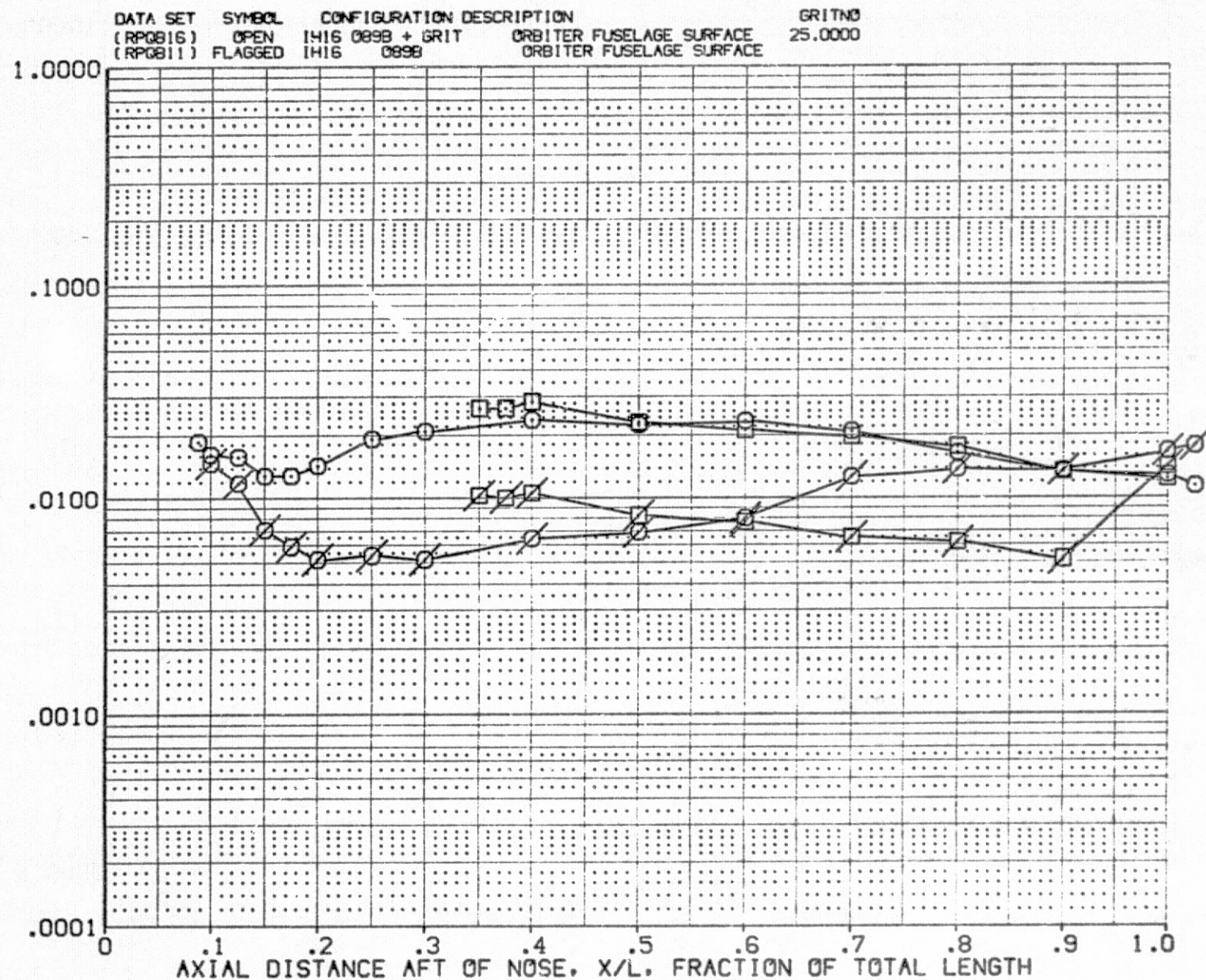


FIG. 15 ORBITER ALONE

GRIT EFFECT



SYMBOL 2Y/B HAW/HT RN/L  
 ○ .400  
 □ .600  
 ◇ .800

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

DATA SET SYMBOL CONFIGURATION DESCRIPTION GRITNO  
 (RPQW16) OPEN IH16 089B + GRIT ORBITER WING SURFACE 25.0000  
 (RPQW11) FLAGGED IH16 089B ORBITER WING SURFACE

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

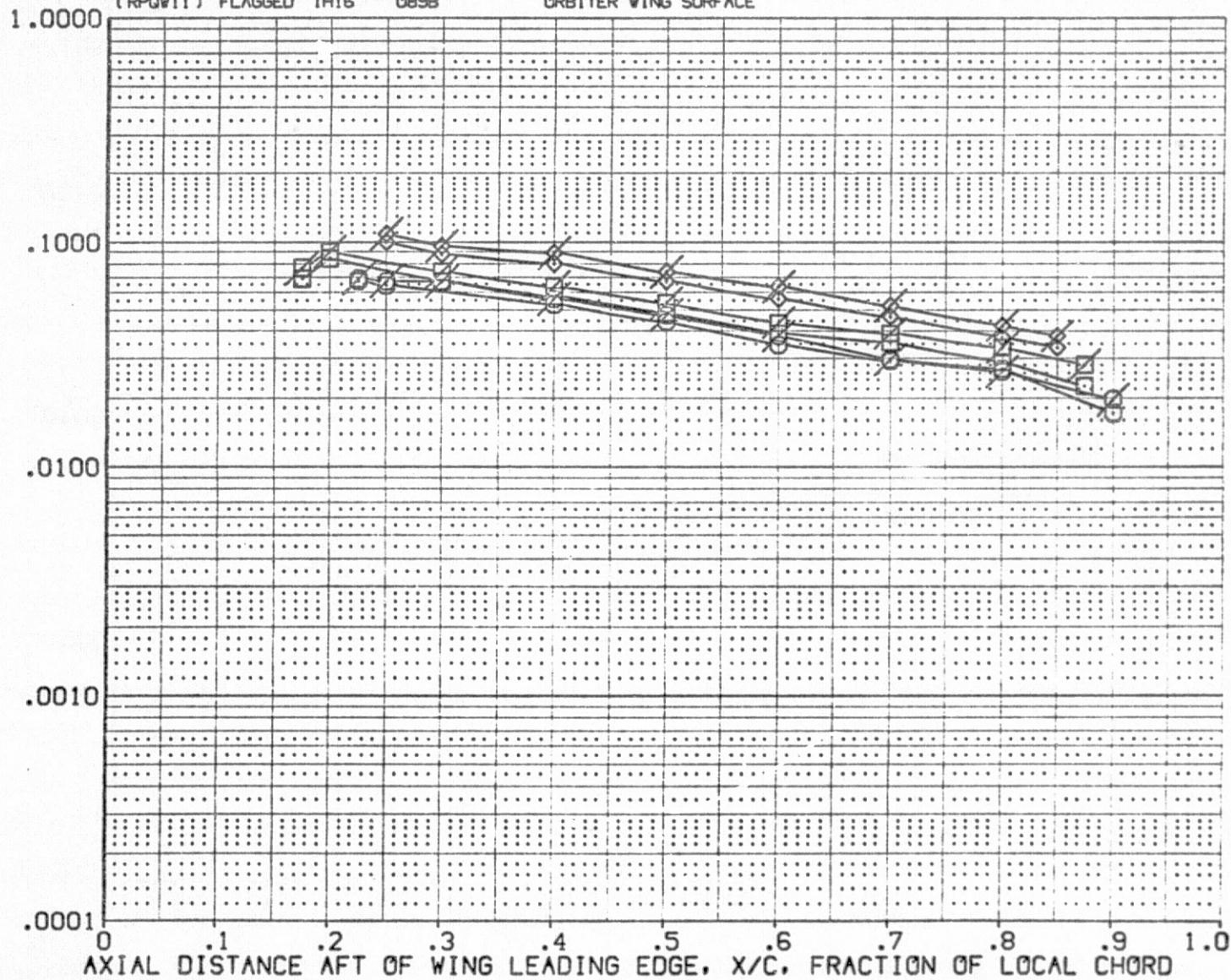


FIG. 15 ORBITER ALONE

GRIT EFFECT

SYMBOL	2Y/B	HAW/HT	RN/L
○	.400	.900	1.910
□	.600		
◇	.800		

MACH  
BETA

PARAMETRIC VALUES  
3.700 ALPHA .000  
.000 BETA

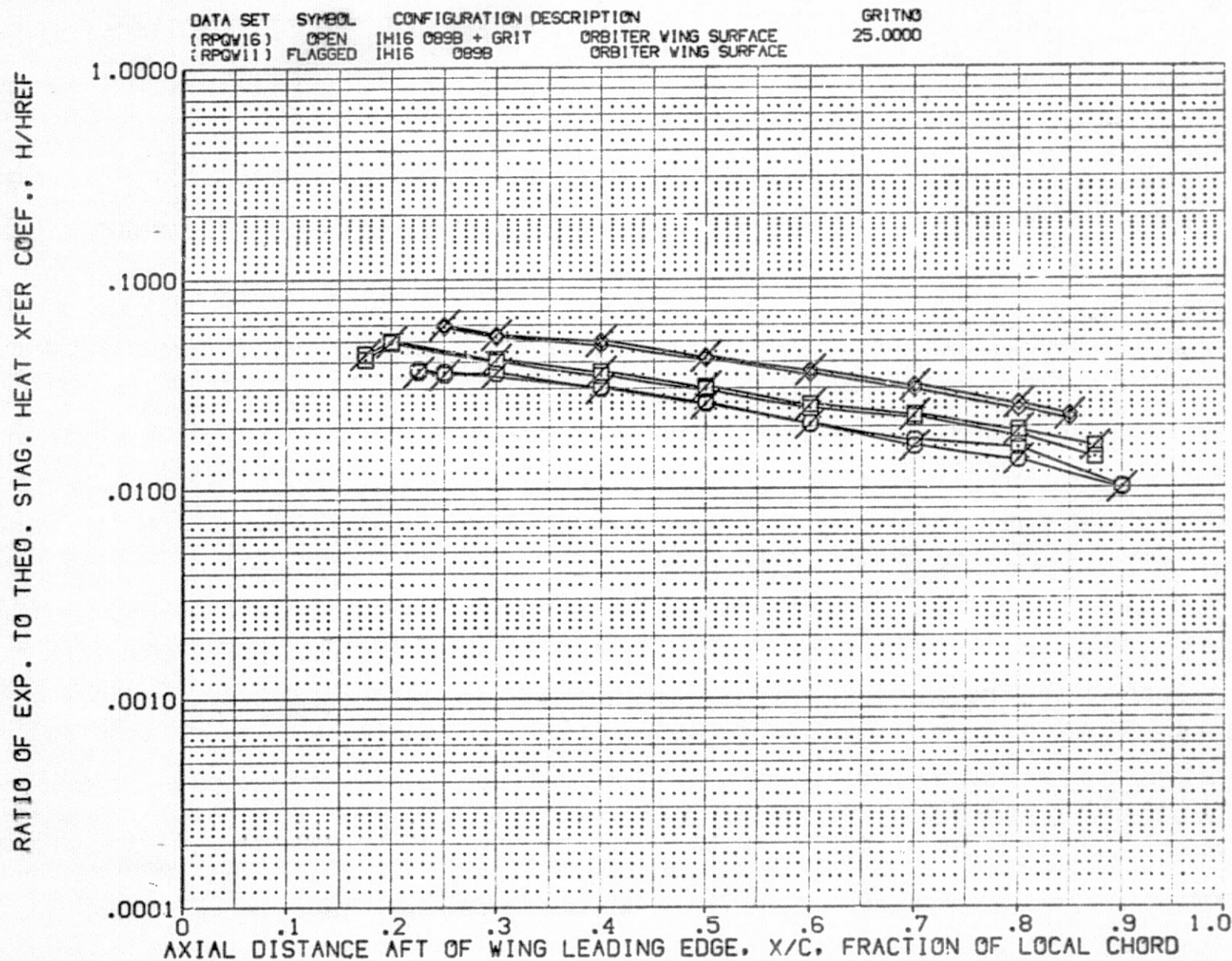


FIG. 15 ORBITER ALONE

GRIT EFFECT



SYMBOL 2Y/B HAW/HT RN/L  
 ○ .400 1.000 1.910  
 □ .600  
 ◇ .800

MACH  
BETA

PARAMETRIC VALUES  
 3.700 ALPHA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

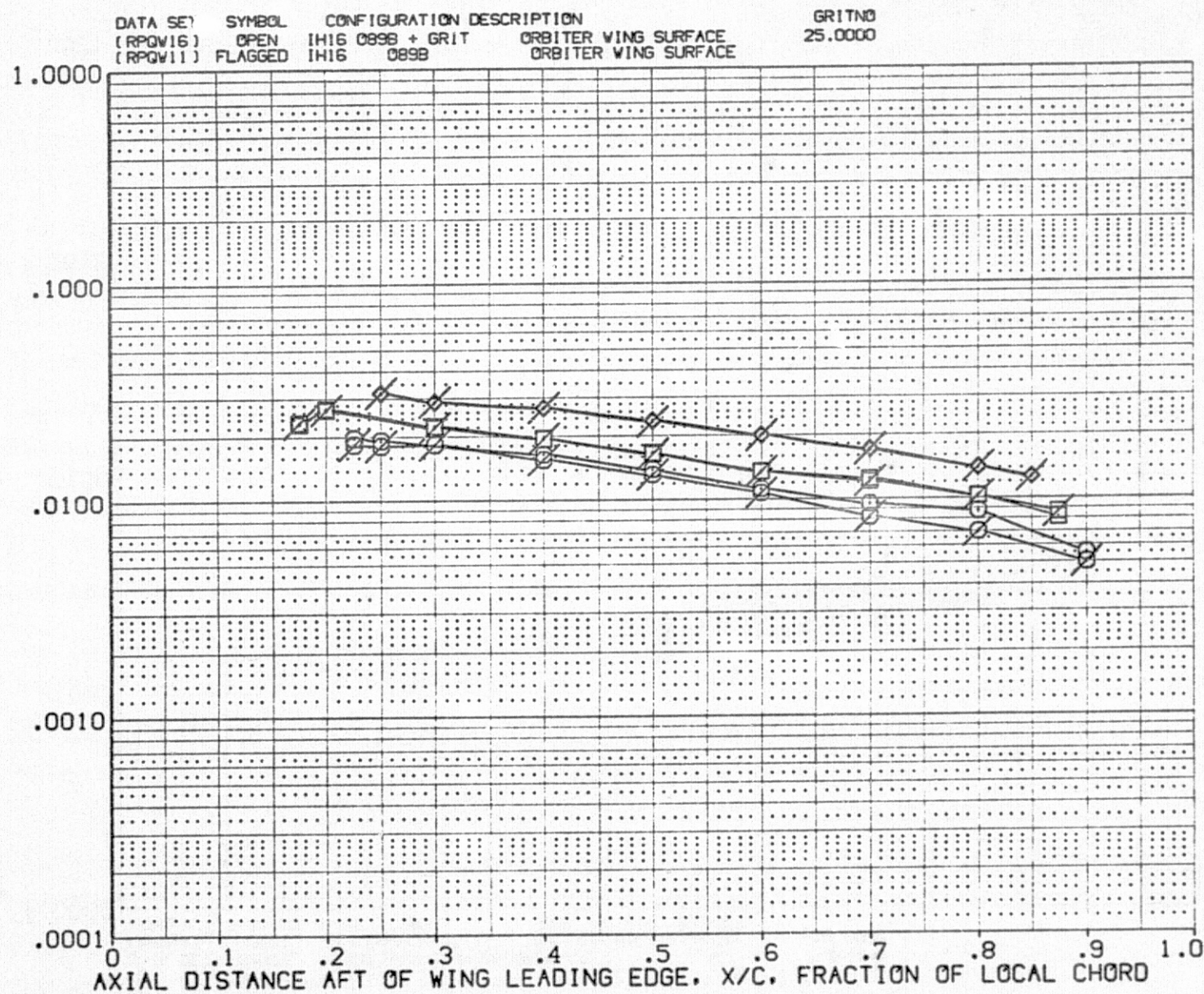


FIG. 15 ORBITER ALONE

GRIT EFFECT



SYMBOL 2Y/B HAW/HT RN/L  
 ○ .400  
 □ .600  
 ◇ .800

MACH 3.700  
 BETA .000  
 PARAMETRIC VALUES ALPHA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

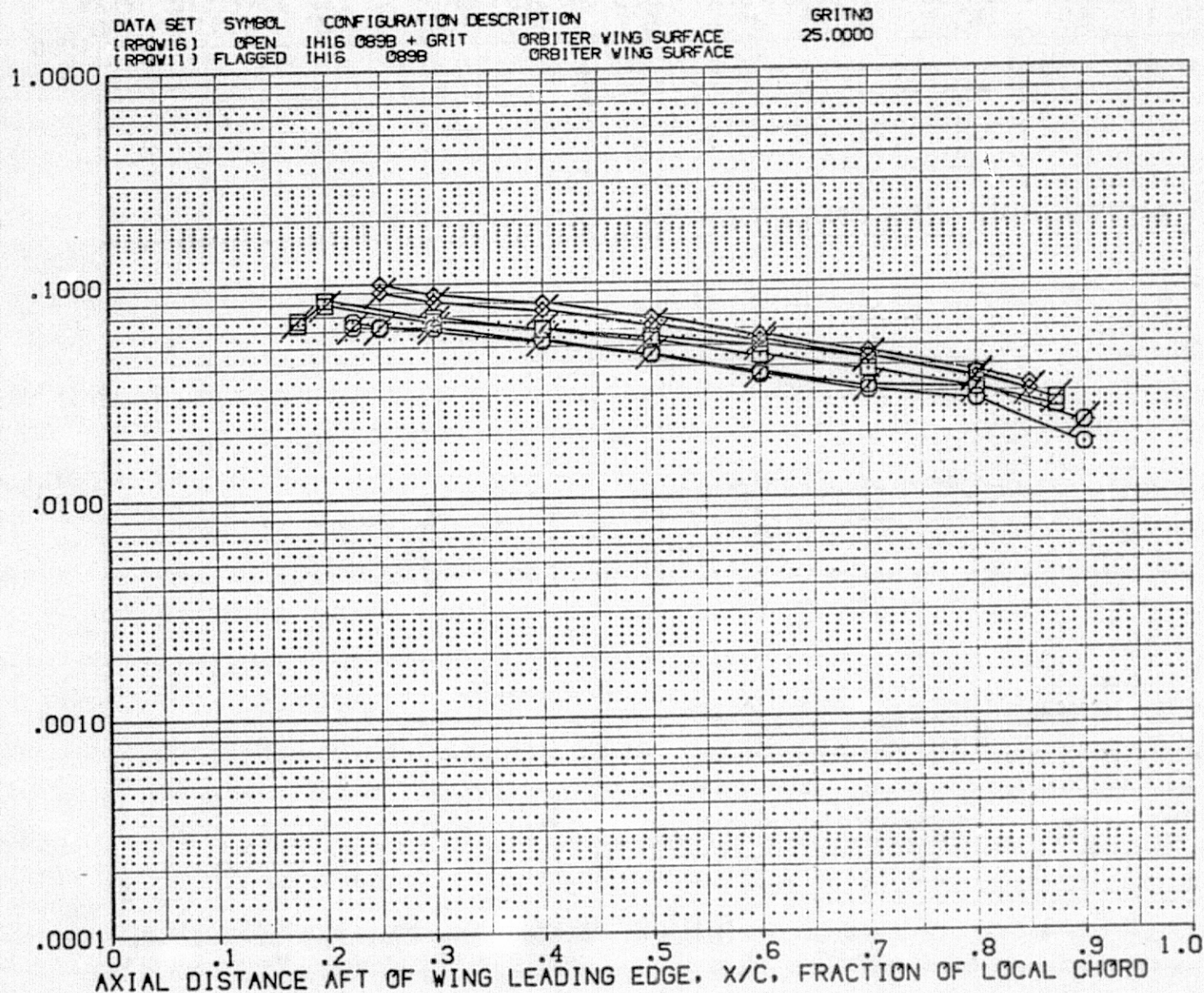


FIG. 15 ORBITER ALONE

GRIT EFFECT



SYMBOL 2Y/B HAW/HT RN/L  
 ○ .400  
 □ .600  
 ◇ .800

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

DATA SET SYMBOL CONFIGURATION DESCRIPTION GRITNO  
 (RPQV16) OPEN IH16 0898 + GRIT ORBITER WING SURFACE 25.0000  
 (RPQV11) FLAGGED IH16 0898 ORBITER WING SURFACE

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

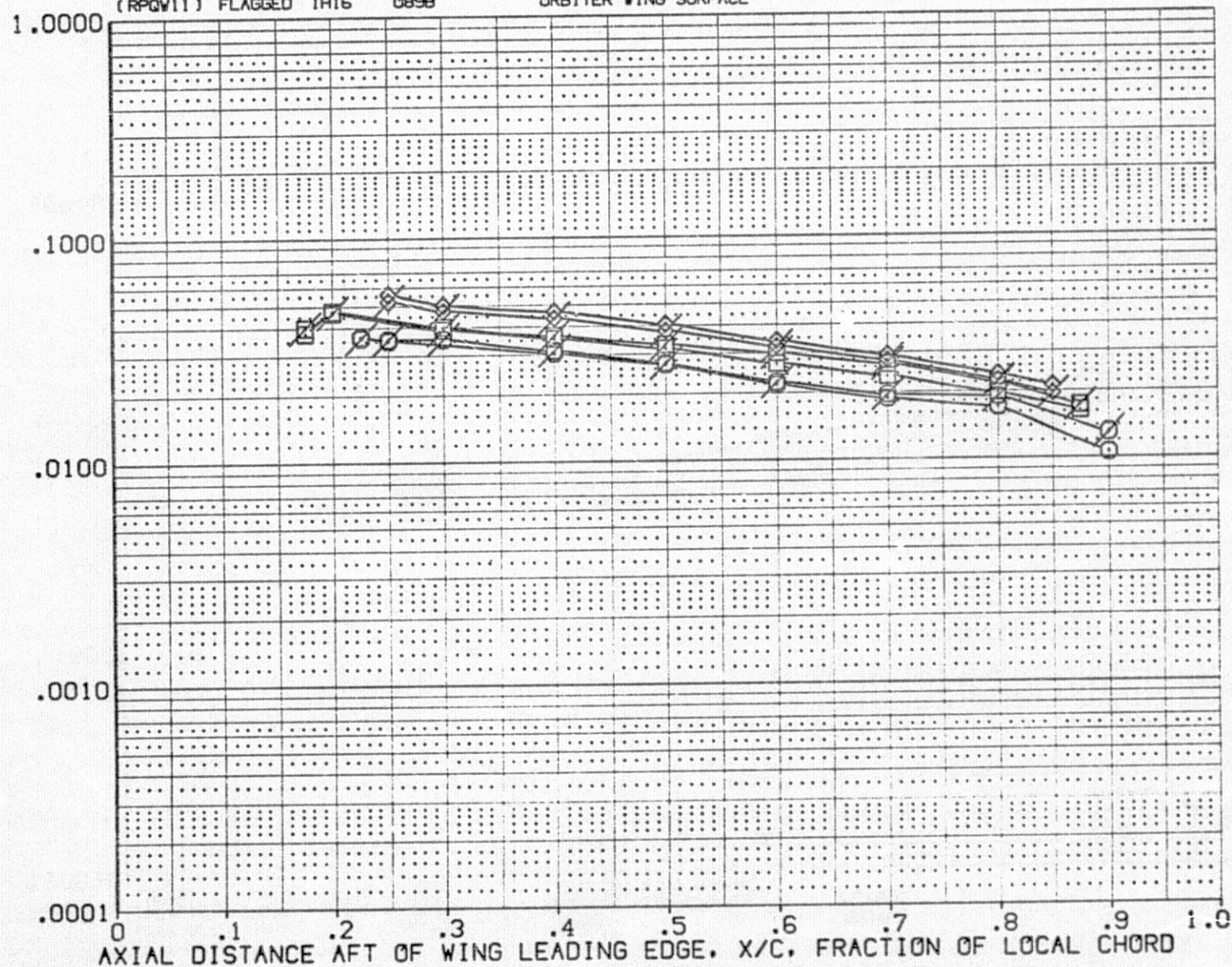


FIG. 15 ORBITER ALONE

GRIT EFFECT



SYMBOL 2Y/B HAW/HT RN/L  
 ○ .400 1.000 4.570  
 □ .600  
 ◇ .800

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

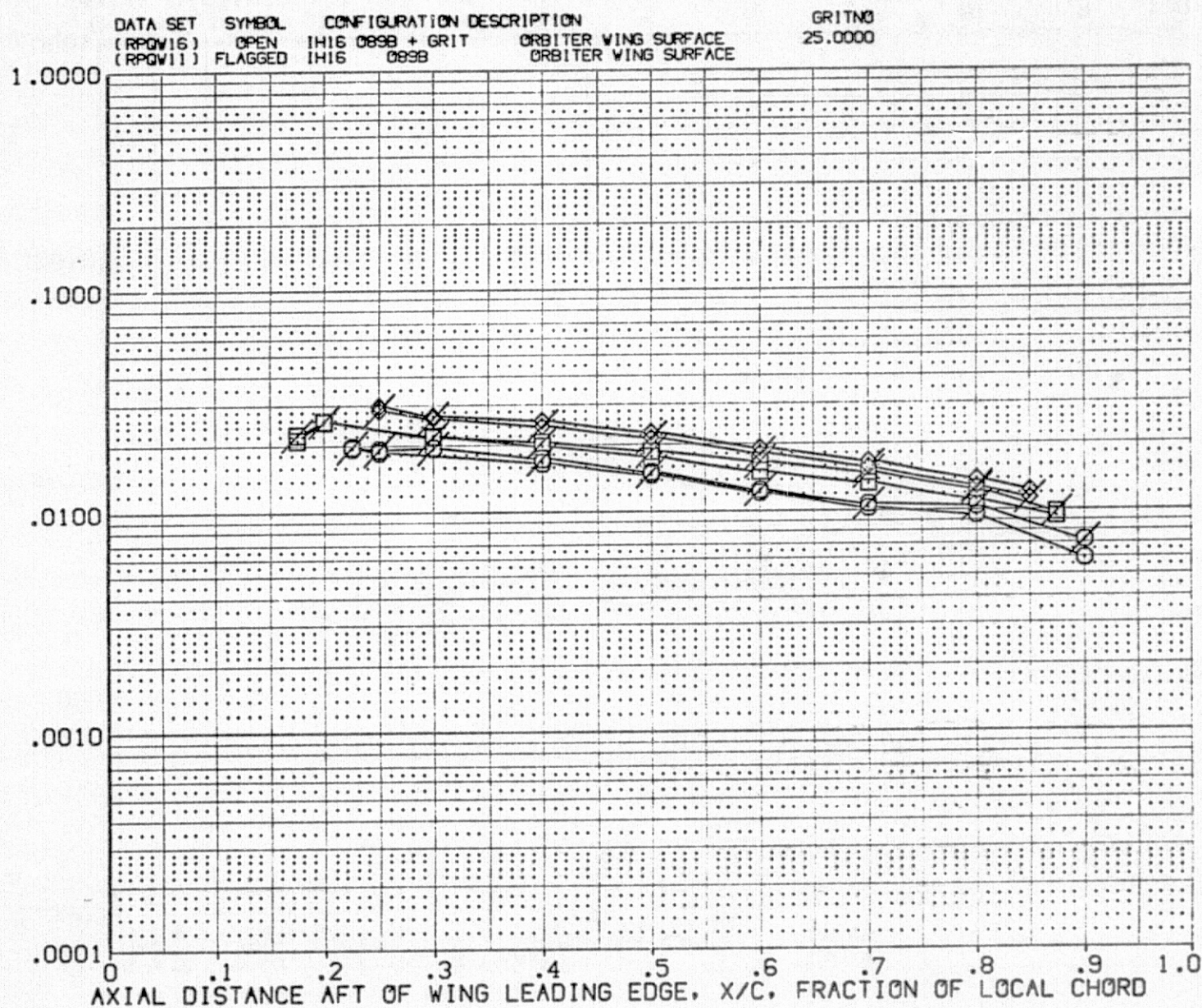


FIG. 15 ORBITER ALONE

GRIT EFFECT



IH16 089B + T8 + S6 ORBITER FUSELAGE SURFACE (RPQB01)

SYMBOL	RN/L	Y(BP)	HAW/HT
○	1.930	.000	.900
□	4.570		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

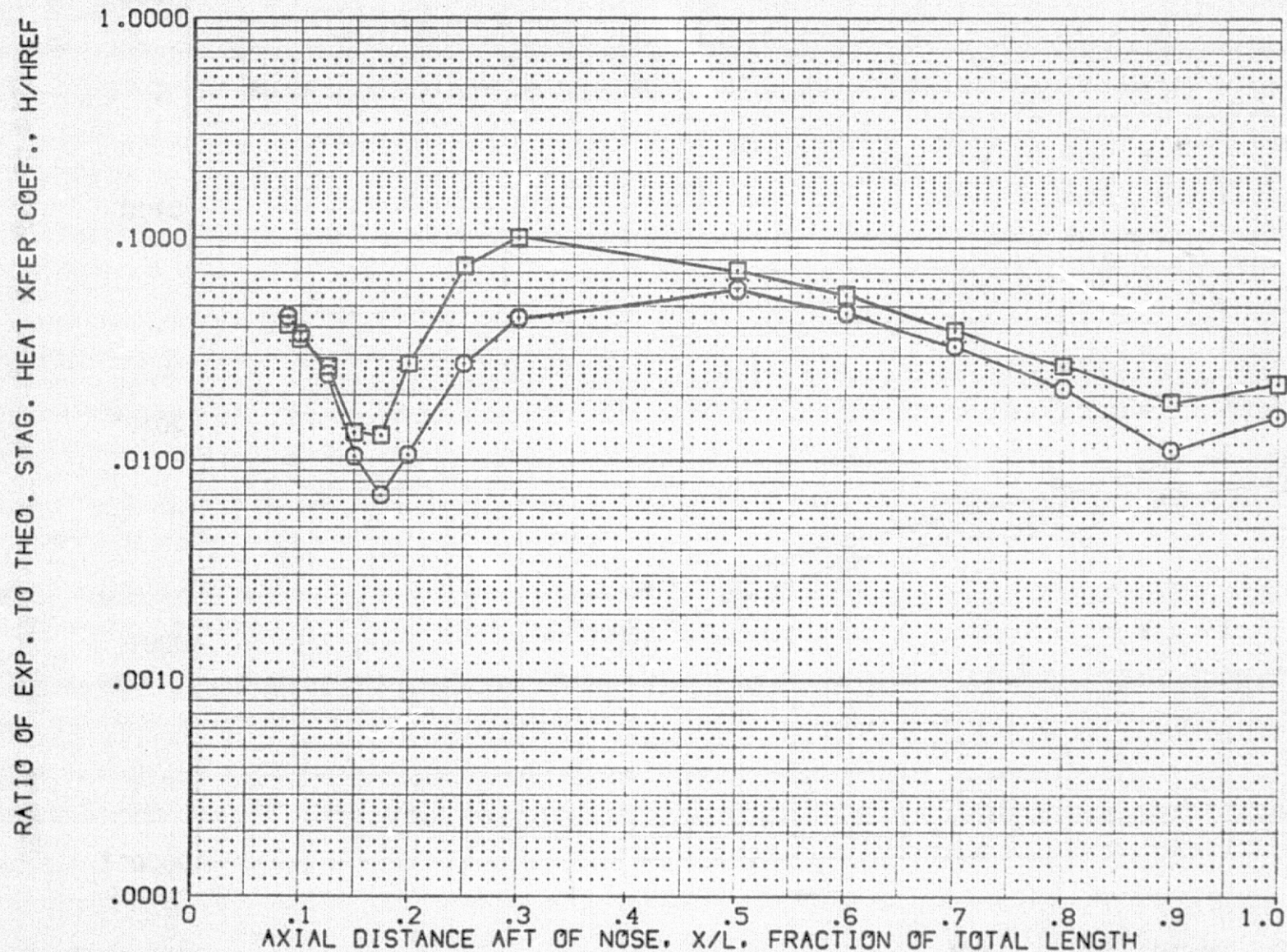


FIG. 16 INTEGRATED VEHICLE - ORBITER SURFACE RN VARIATION ALPHA = 0 DH=.175



SYMBOL ○ □	RN/L	Y(BP)	HAW/HT	MACH BETA	PARAMETRIC VALUES		
	1.930 4.570	70.000	.900		3.700 .000	ALPHA DELTAH	.000 .175

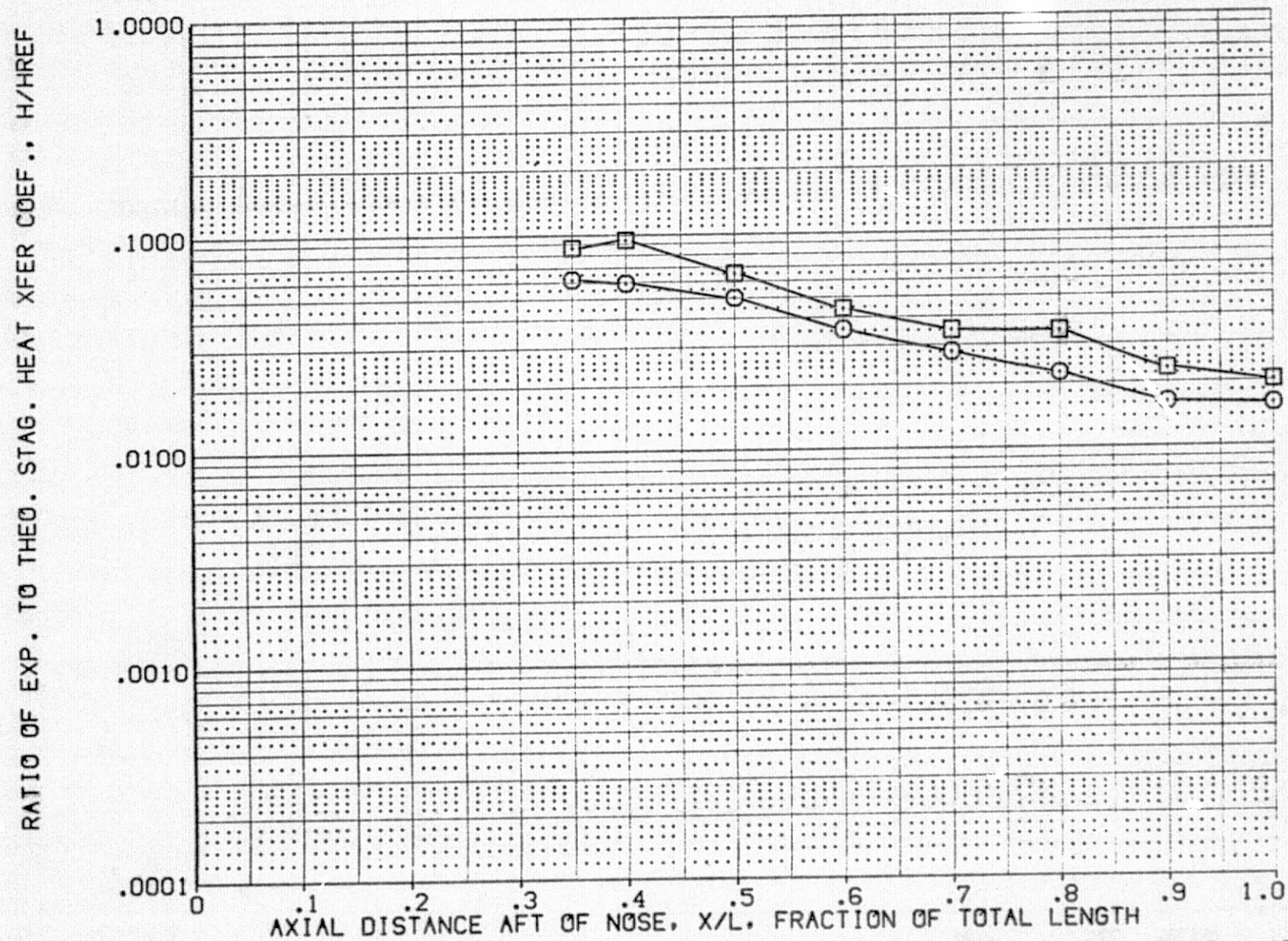


FIG. 16 INTEGRATED VEHICLE - ORBITER SURFACE RN VARIATION ALPHA = 0 DH=.175



## IH16 089B + T8 + S6 ORBITER WING SURFACE

(RPQW01)

SYMBOL

RN/L

2Y/B

HAW/HT

○  
□1.930  
4.570

.400

.900

MACH  
BETA

PARAMETRIC VALUES

3.700

ALPHA

.000

.000

DELTAH

.175

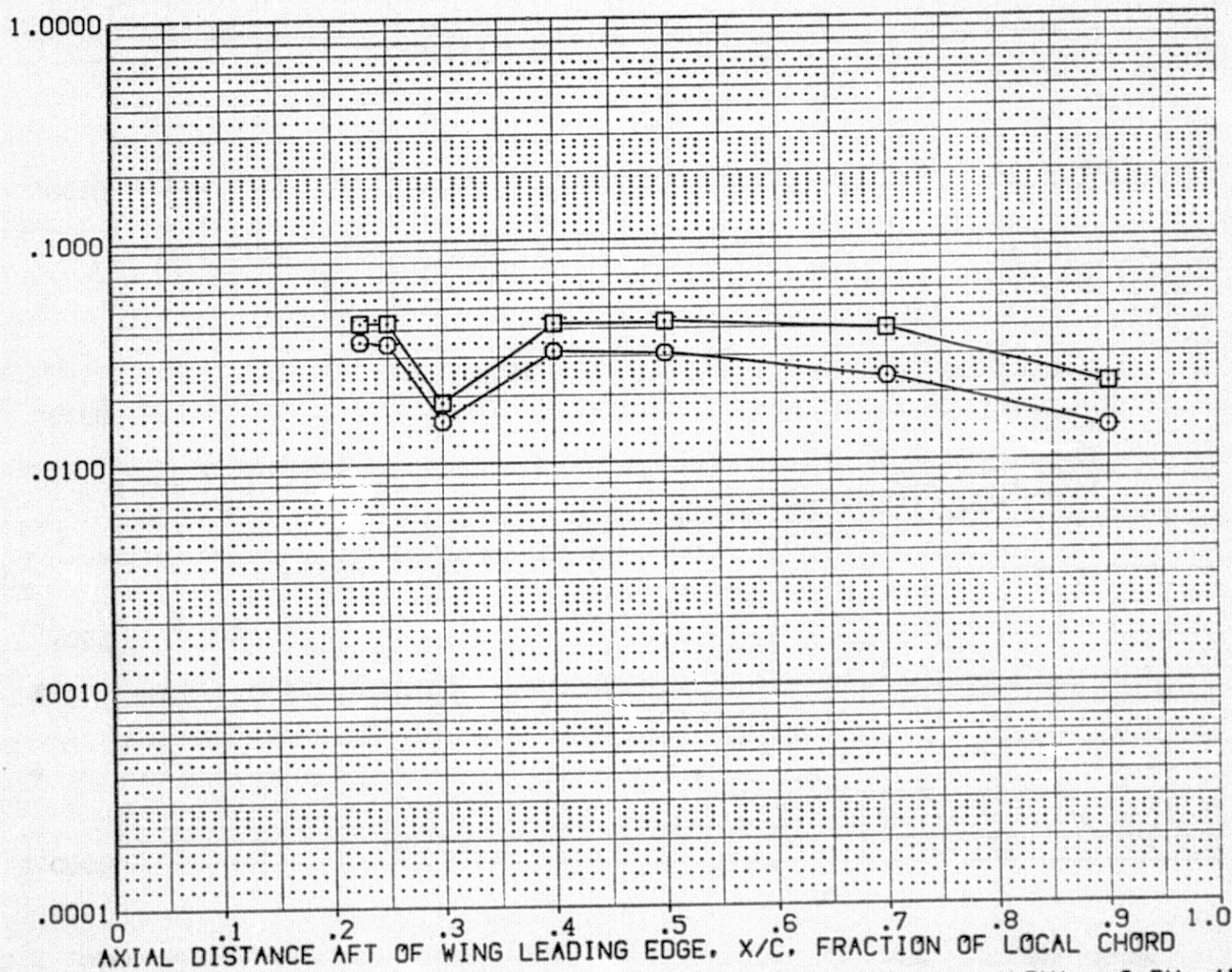
RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $H/H_{REF}$ 

FIG. 16 INTEGRATED VEHICLE - ORBITER SURFACE RN VARIATION ALPHA = 0 DH = .175



SYMBOL  
○  
□RN/L  
1.930  
4.5702Y/B  
.600HAW/HT  
.900MACH  
BETA

PARAMETRIC VALUES

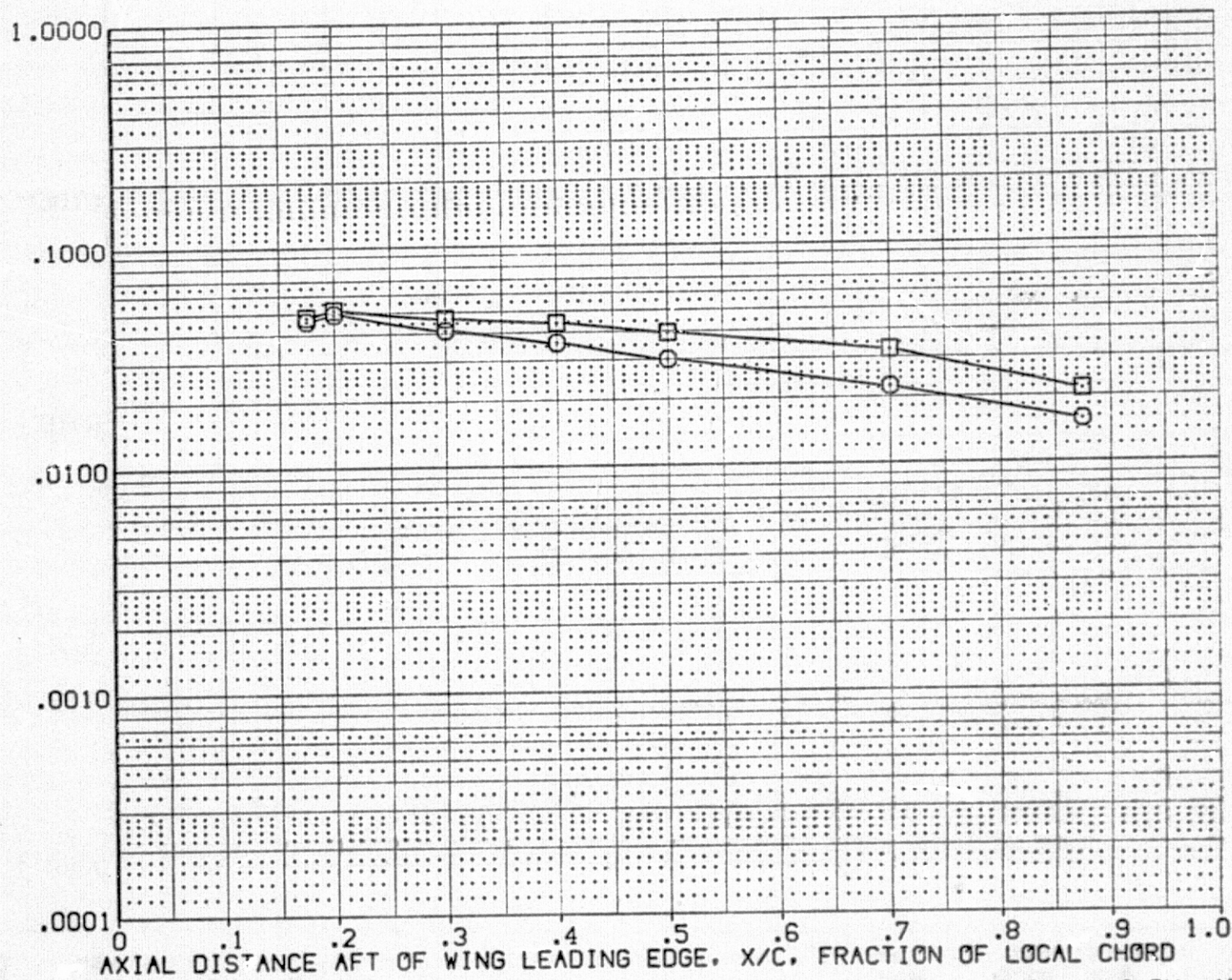
3.700  
.000ALPHA  
DELTAH.000  
.175RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $H/H_{REF}$ 

FIG. 16 INTEGRATED VEHICLE - ORBITER SURFACE RN VARIATION ALPHA = 0 DH = .175



## IH16 089B + T8 + S6 ORBITER WING SURFACE

(RPQW01)

SYMBOL	RN/L	2Y/B	HAW/HT
○	1.930	.800	.900
□	4.570		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

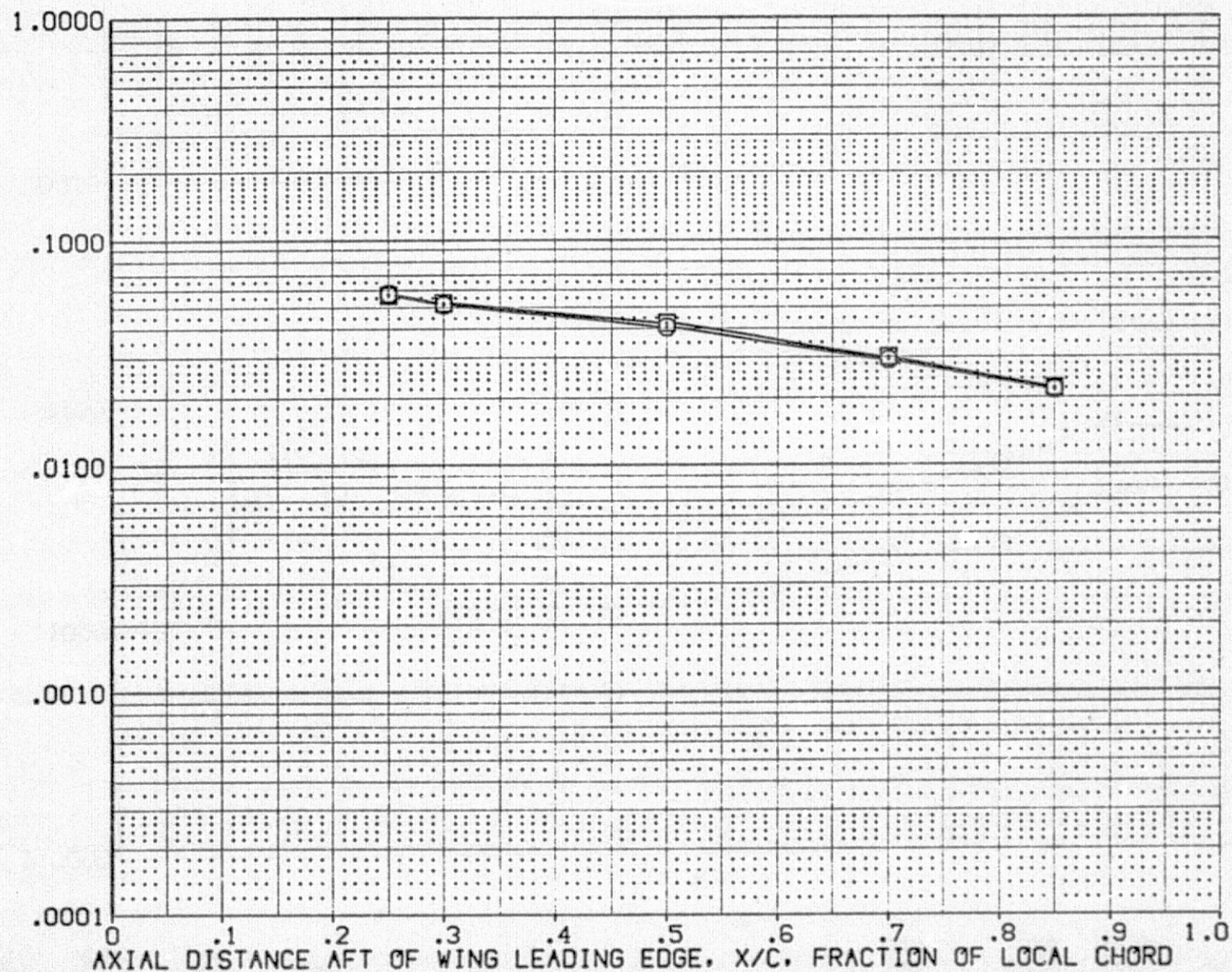


FIG. 16 INTEGRATED VEHICLE - ORBITER SURFACE RN VARIATION ALPHA = 0 DH=.175



IH16 089B + T8 + S6 ORBITER FUSELAGE SURFACE (RPQB02)

SYMBOL    RN/L    Y(BP)    HAV/HT  
 □    1.990    .000    .900  
   4.560

PARAMETRIC VALUES  
 MACH    3.700    ALPHA    -5.000  
 BETA    .000    DELTAH    .175

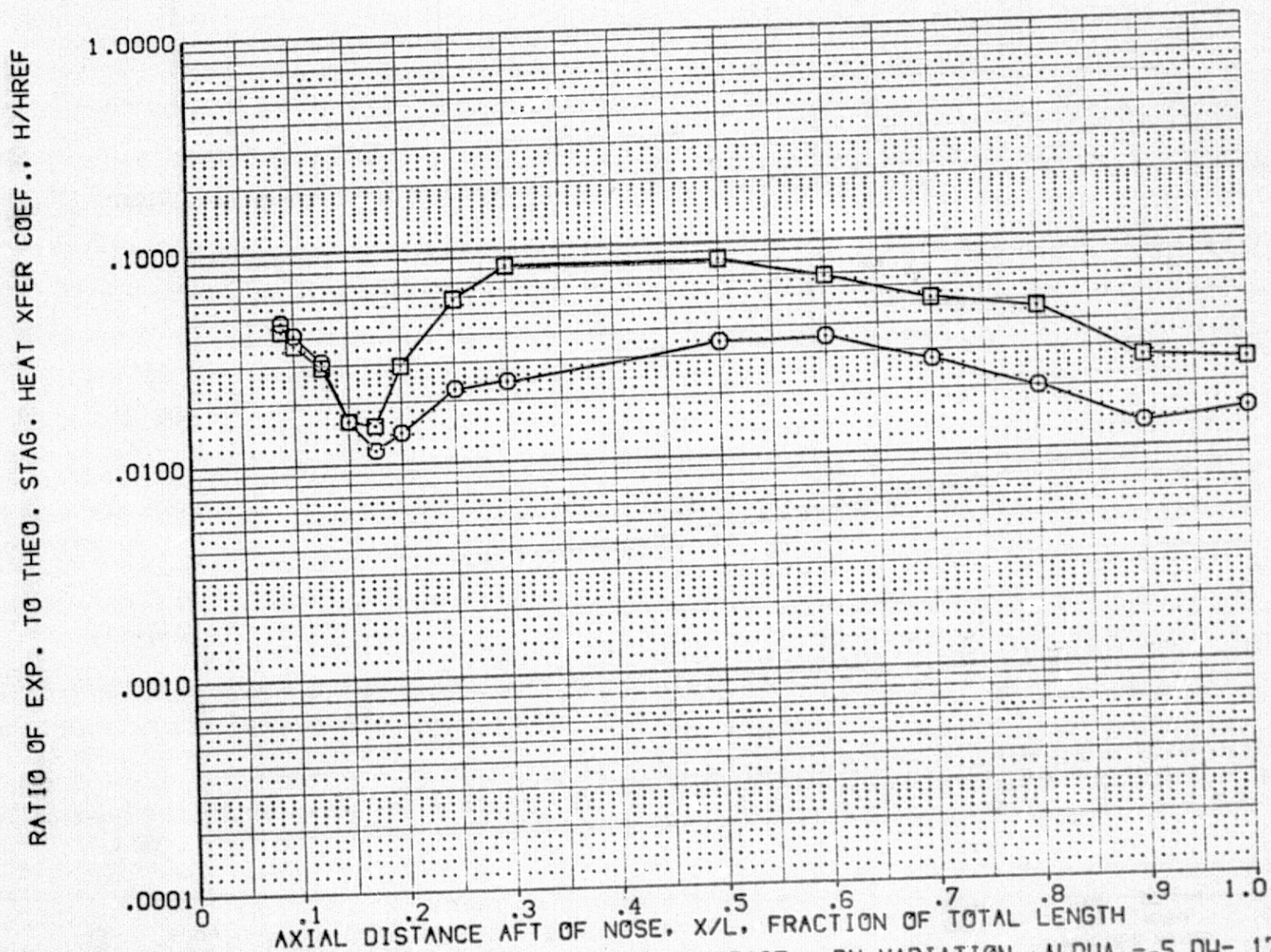


FIG. 17 INTEGRATED VEHICLE - ORBITER SURFACE RN VARIATION ALPHA = -5 DH = .175



IH16 089B + T8 + S6 ORBITER FUSELAGE SURFACE (RPQB02)

SYMBOL	RN/L	Y(BP)	HAW/HT
○	1.990	70.000	.900
□	4.560		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
ALPHA	-5.000
DELTAH	.175

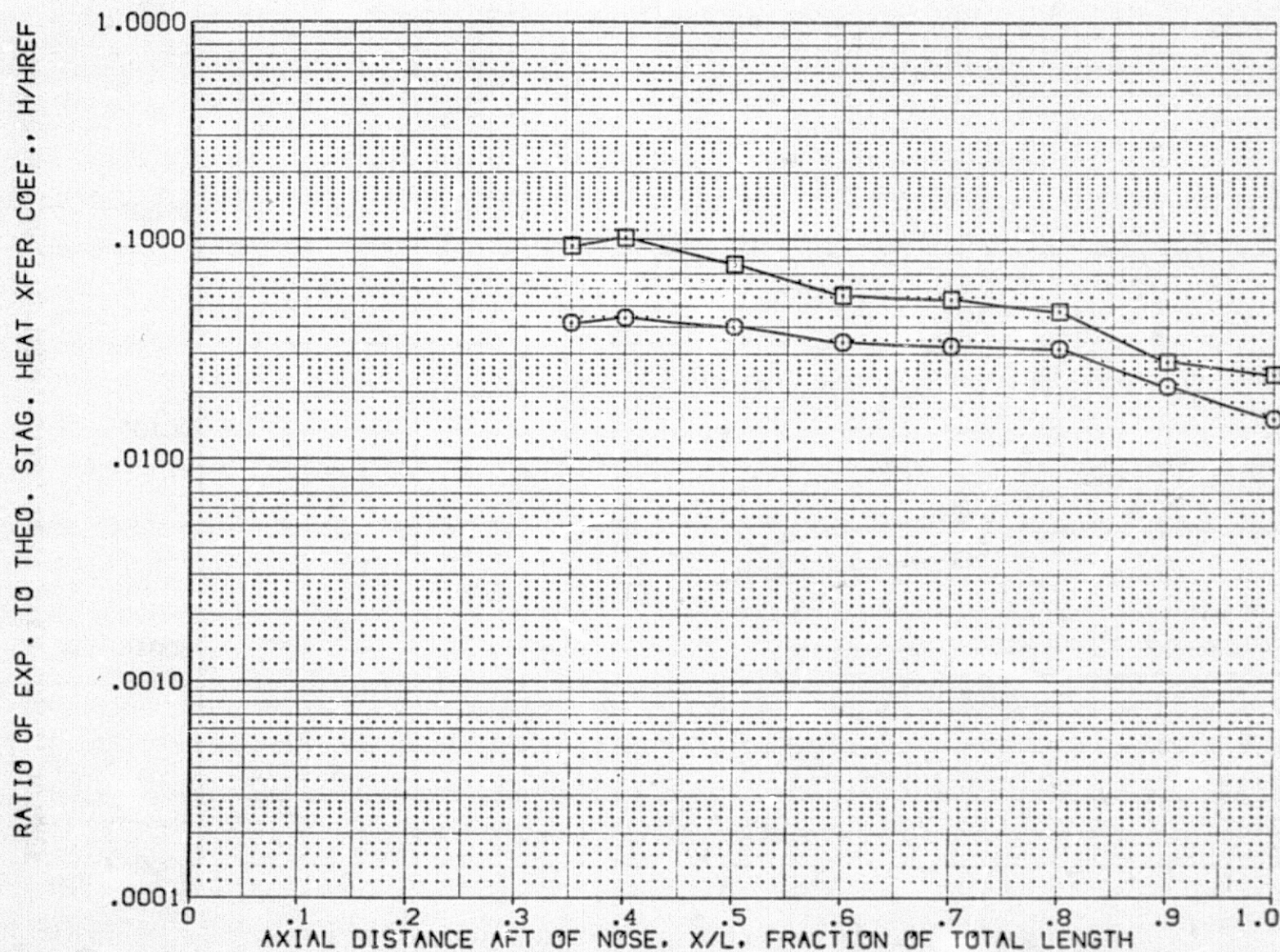


FIG. 17 INTEGRATED VEHICLE - ORBITER SURFACE RN VARIATION ALPHA = -5 DH = .175



SYMBOL	RN/L	2Y/B	HAW/HT
○	1.990	.400	.900
□	4.560		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	-5.000
BETA	.000	DELTAH	.175

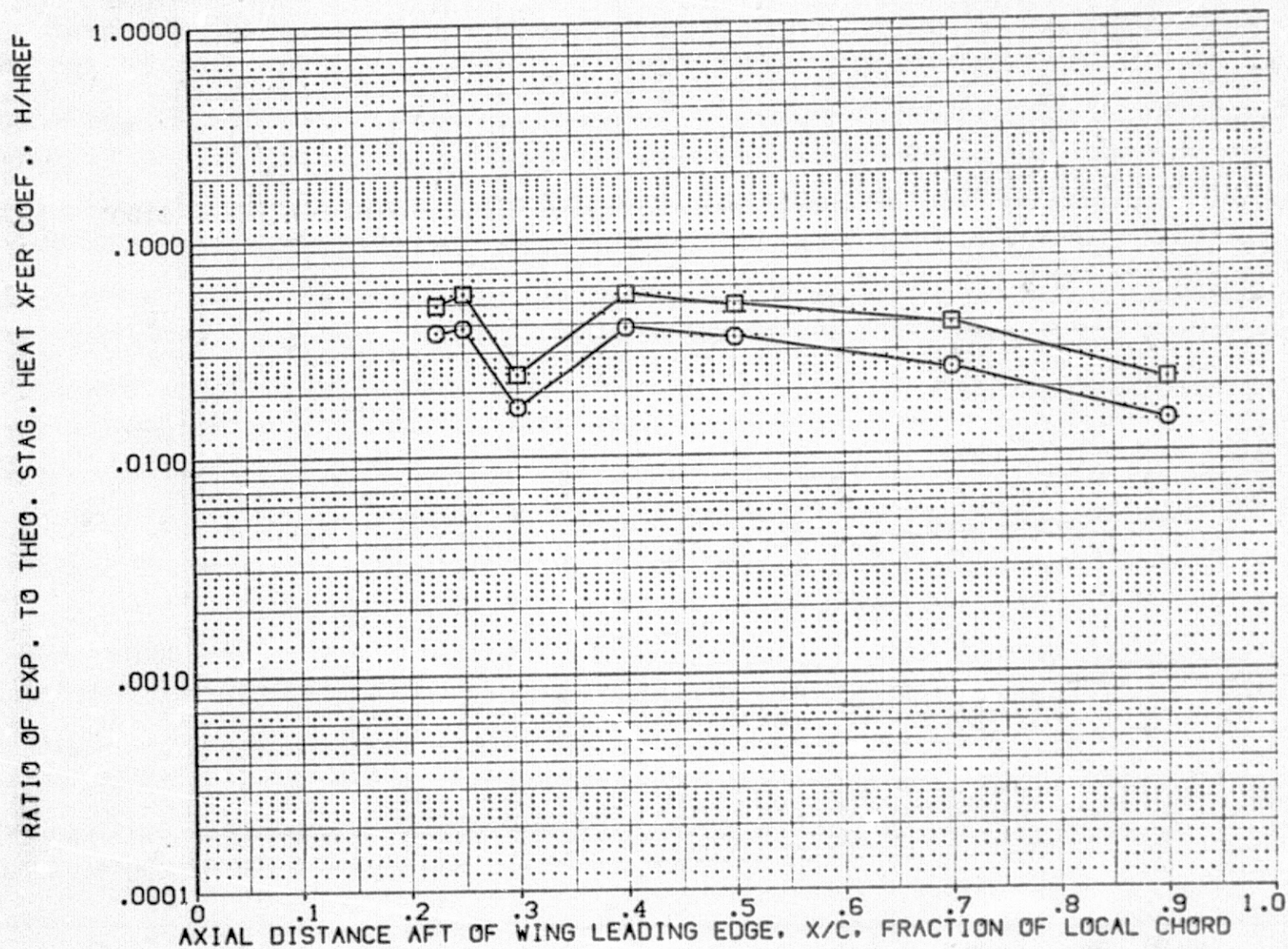


FIG. 17 INTEGRATED VEHICLE - ORBITER SURFACE RN VARIATION ALPHA = -5 DH = .175



IH16 089B + T8 + S6 ORBITER WING SURFACE

(RPQW02)

SYMBOL	RN/L	2Y/B	HAW/HT
○	1.990	.600	.900
□	4.560		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	-5.000
BETA	.000	DELTAH	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

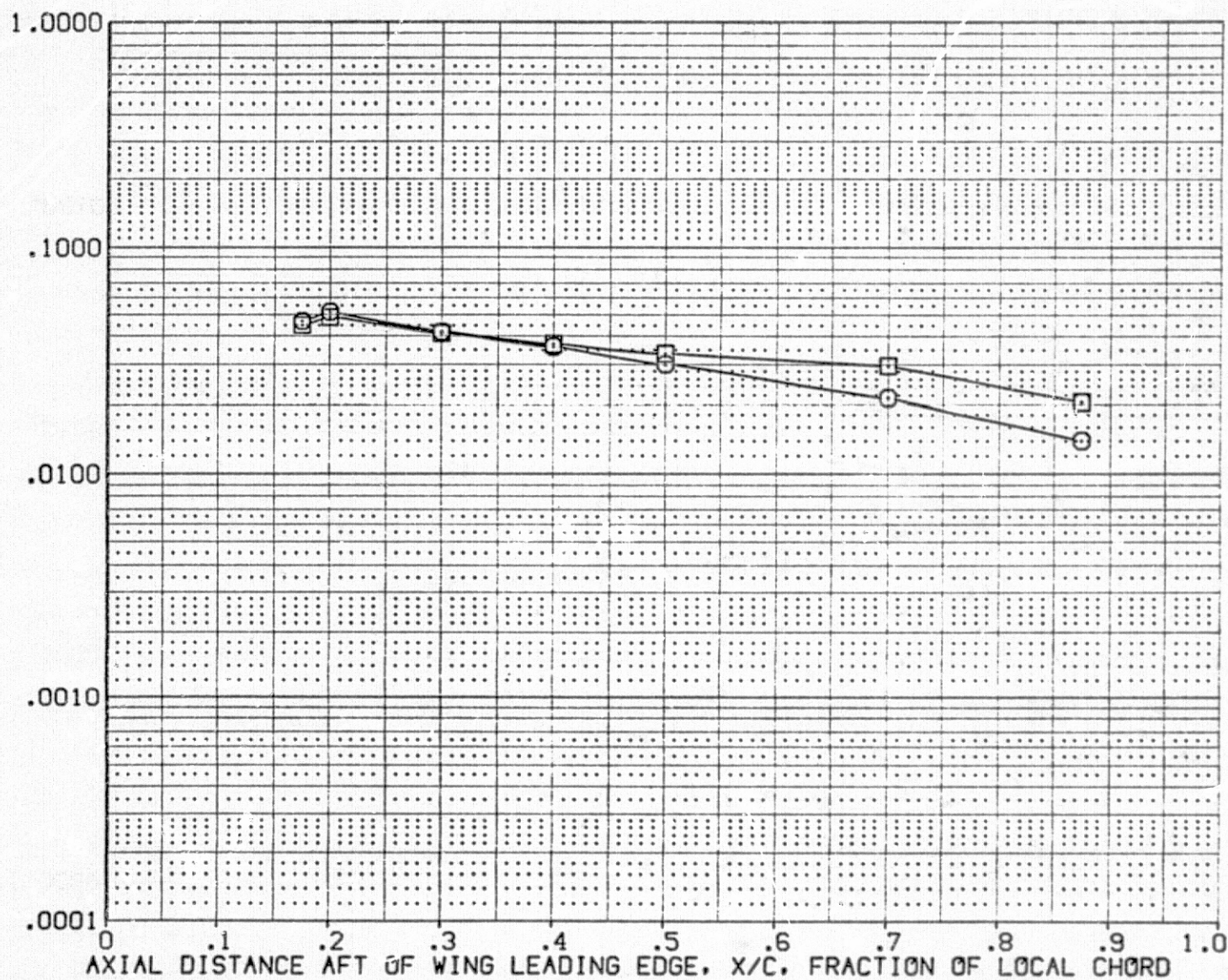


FIG. 17 INTEGRATED VEHICLE - ORBITER SURFACE RN VARIATION ALPHA = -5 DH = .175



SYMBOL	RN/L	2Y/B	HAW/HT
○	1.990	.800	.900
□	4.560		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	-5.000
BETA	.000	DELTAH	.175

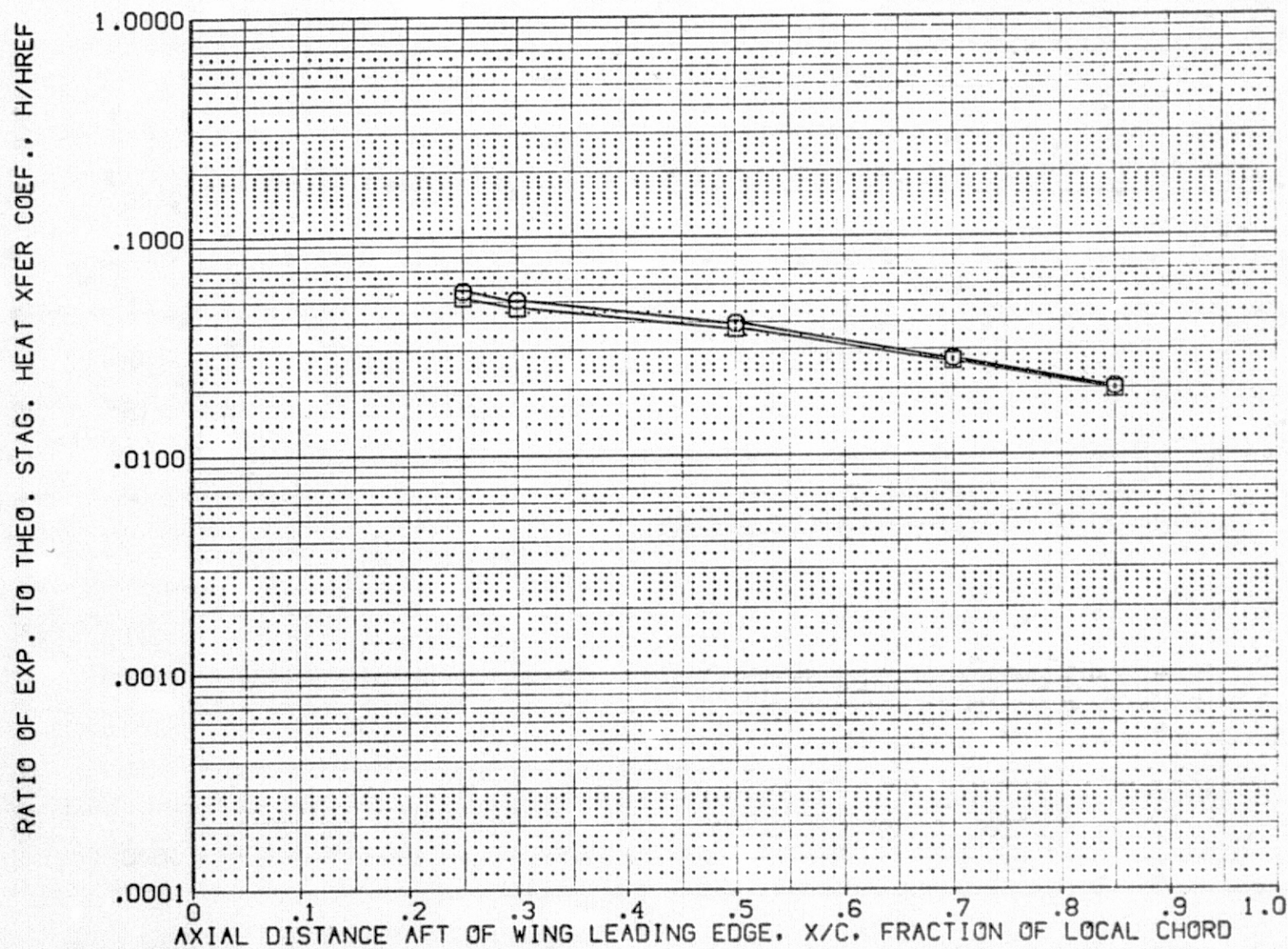


FIG. 17 INTEGRATED VEHICLE - ORBITER SURFACE RN VARIATION ALPHA = -5 DH = .175

IH16 089B + T8 + S6 ORBITER FUSELAGE SURFACE (RPQB13)

SYMBOL    RN/L    Y(BP)    HAW/HT  
 ○        1.990    .000    .900  
 □        4.550

PARAMETRIC VALUES  
 MACH        3.700    ALPHA        .000  
 BETA        .000    DELTAH      .069

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $H/H_{REF}$

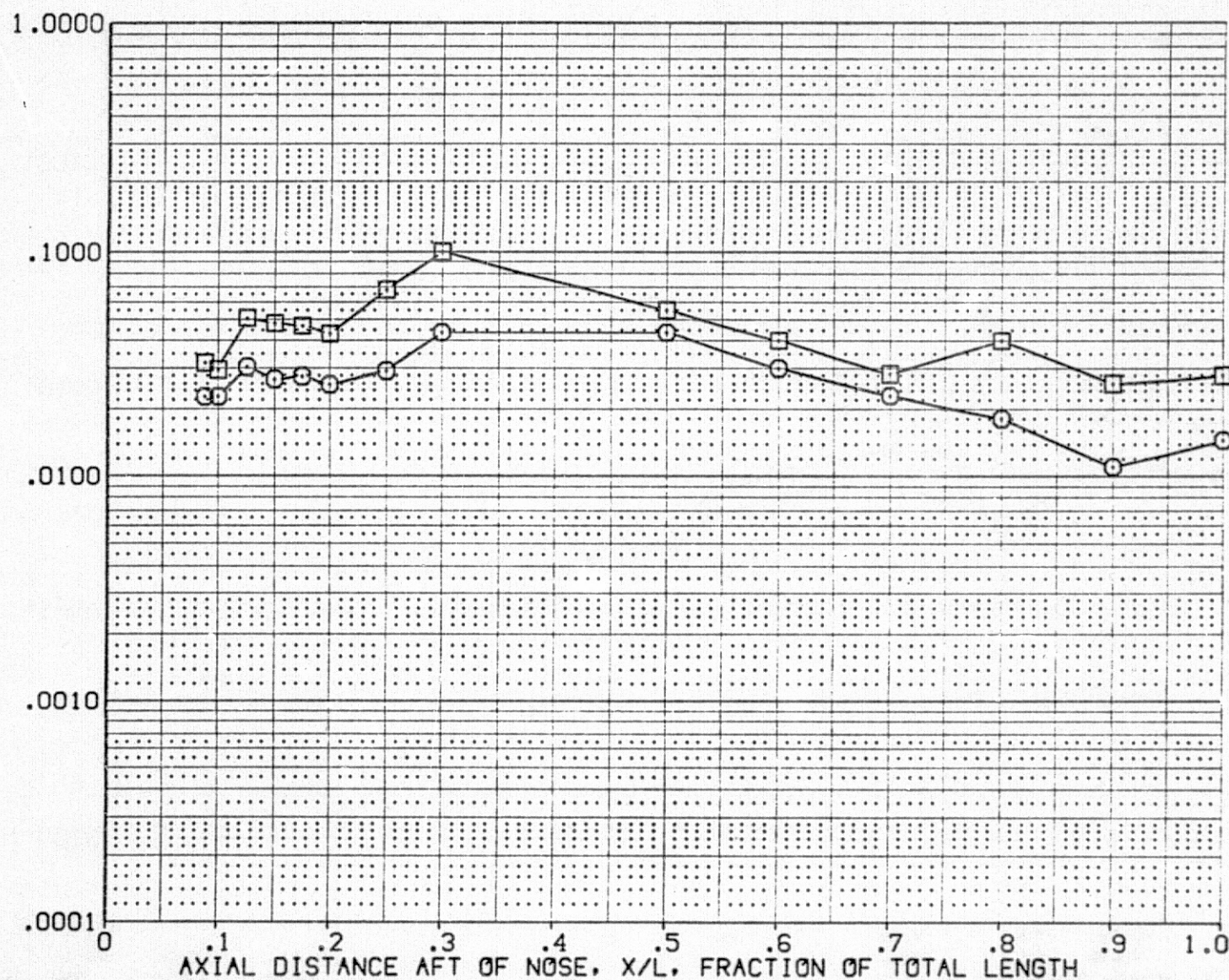


FIG. 18 INTEGRATED VEHICLE - ORBITER SURFACE RN VARIATION ALPHA = 0 DH=.069



IH16 089B + T8 + S6 ORBITER FUSELAGE SURFACE (RPQB13)

SYMBOL    RN/L    Y(BP)    HAW/HT  
 ○    1.990    70.000    .900  
 □    4.550

PARAMETRIC VALUES  
 MACH    3.700    ALPHA    .000  
 BETA    .000    DELTAH    .069

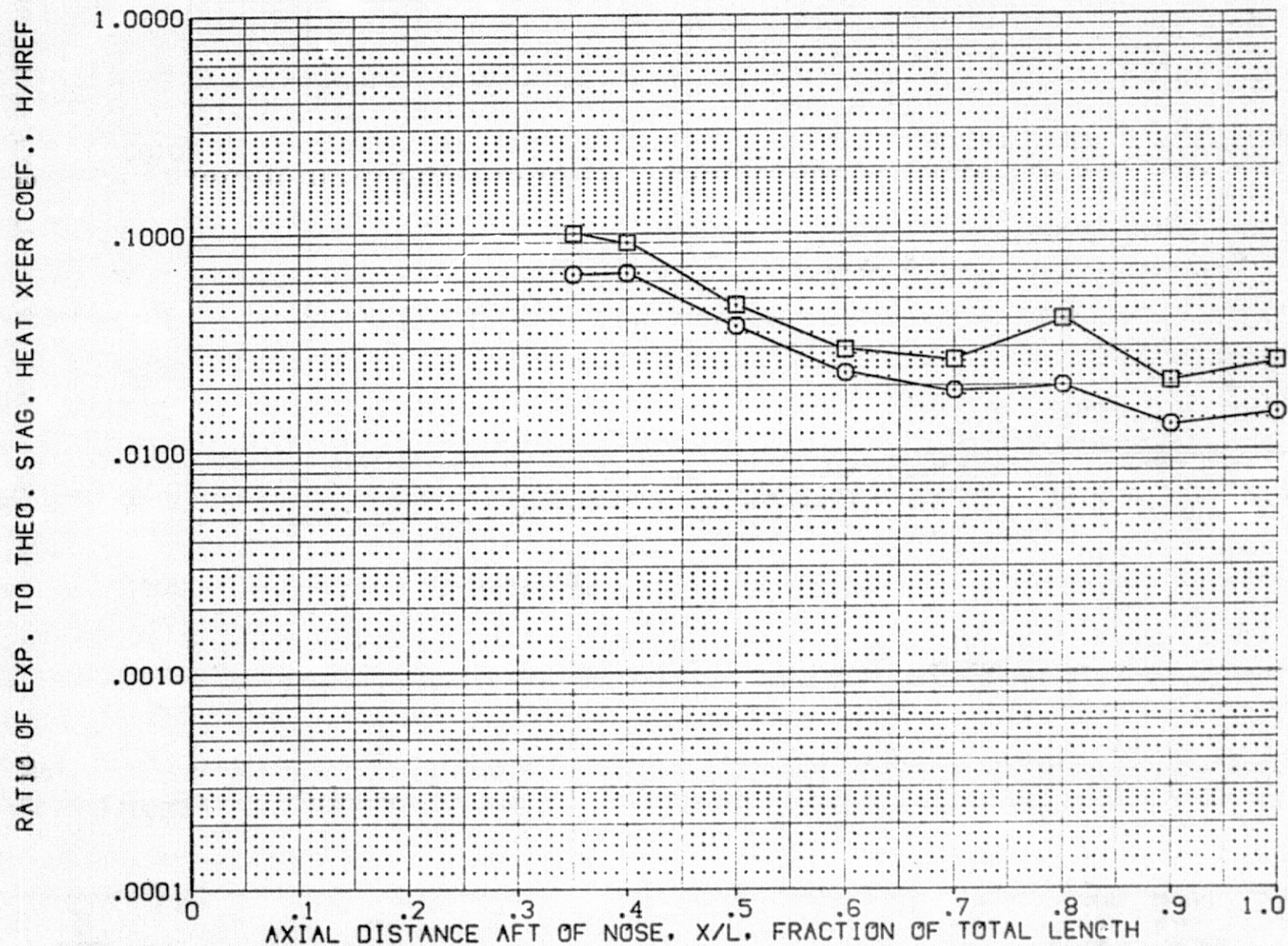


FIG. 18 INTEGRATED VEHICLE - ORBITER SURFACE RN VARIATION ALPHA = 0 DH=.069



IH16 089B + T8 + S6 ORBITER WING SURFACE

(RPQW13)

SYMBOL	RN/L	2Y/B	HAW/HT
○	1.990	.400	.900
□	4.550		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.069

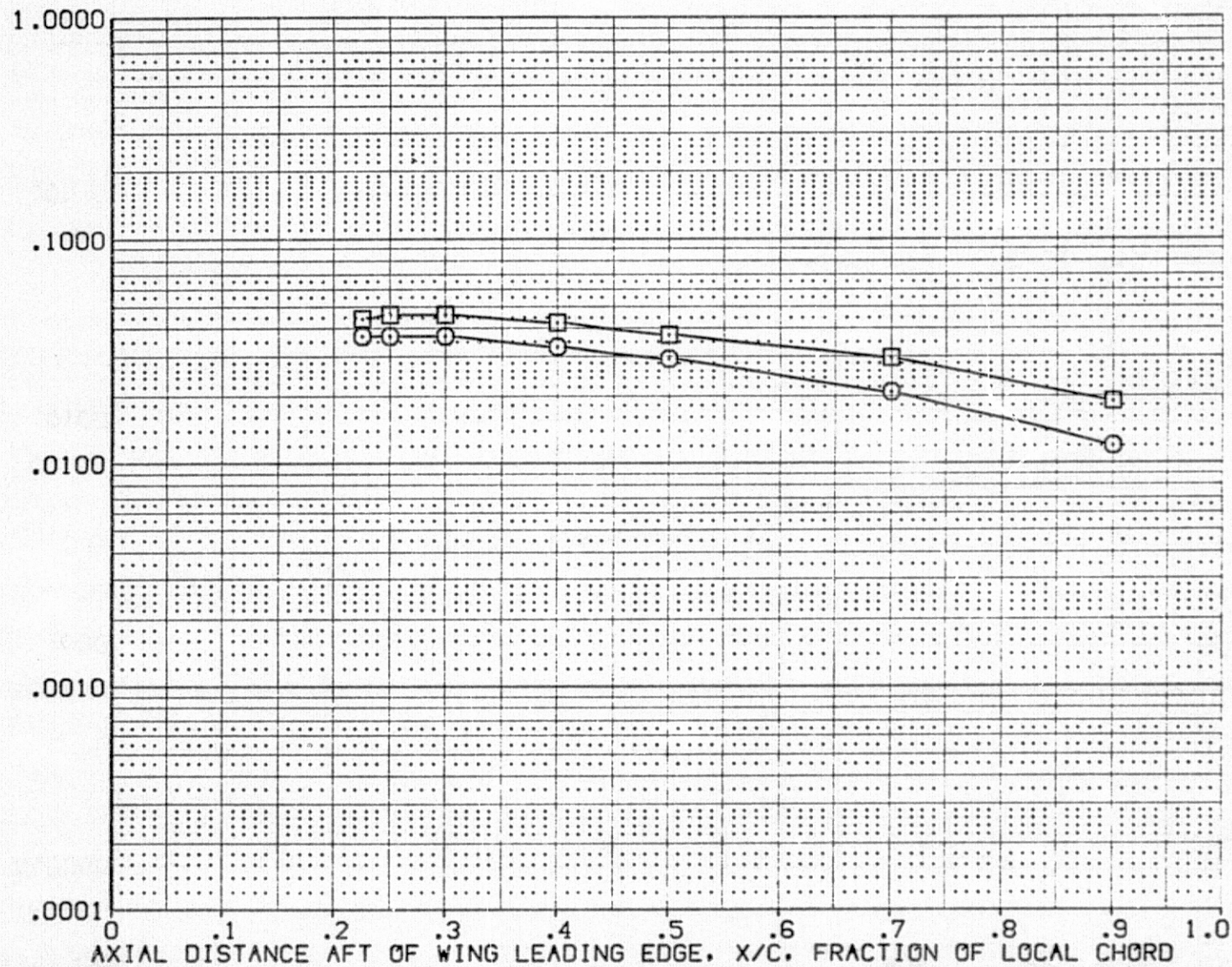
RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $H/H_{REF}$ 

FIG. 18 INTEGRATED VEHICLE - ORBITER SURFACE RN VARIATION ALPHA = 0 DH=.069



SYMBOL	RN/L	2Y/B	HAW/HT
○	1.990	.600	.900
□	4.550		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.069

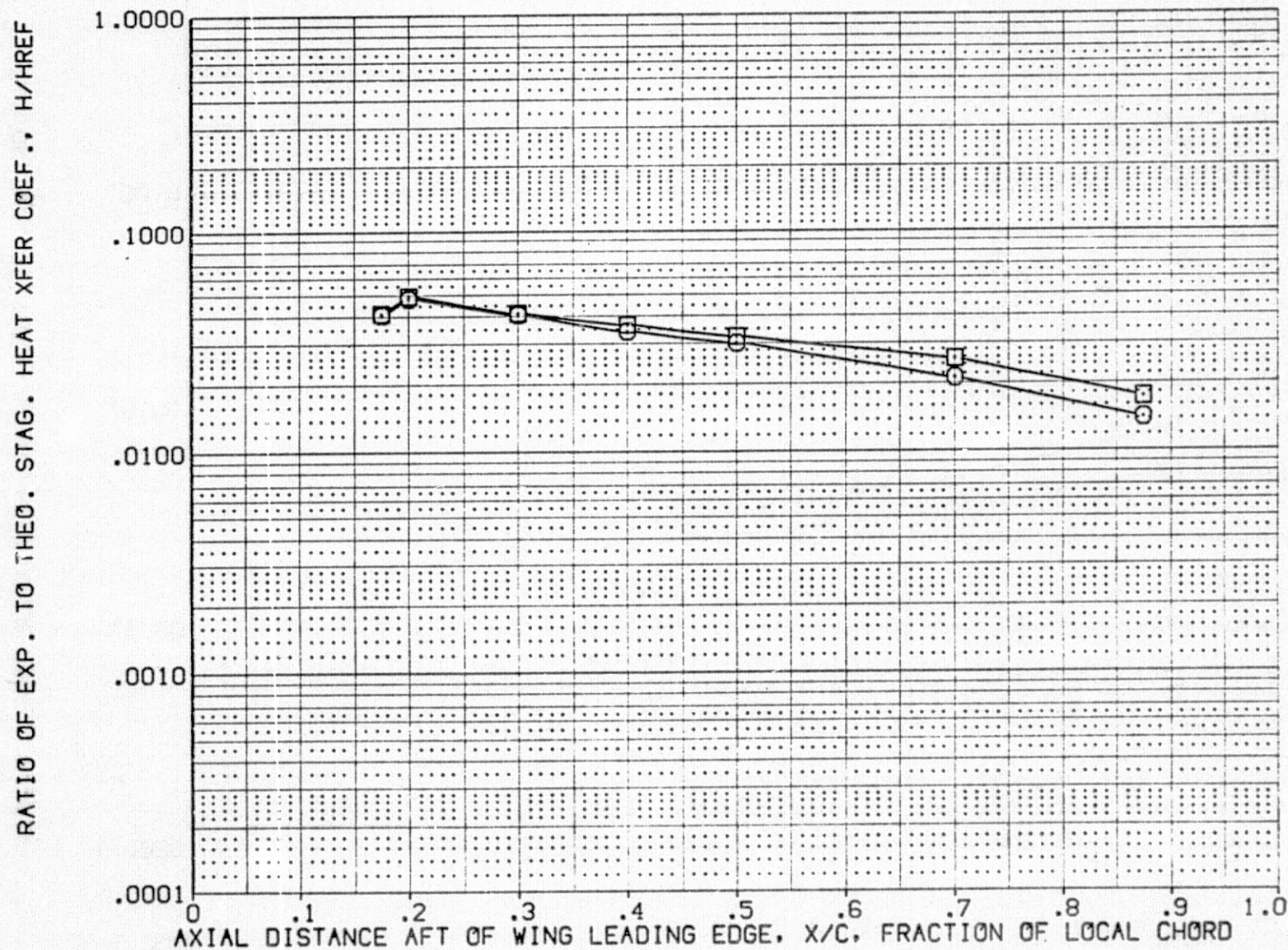


FIG. 18 INTEGRATED VEHICLE - ORBITER SURFACE RN VARIATION ALPHA = 0 DH=.069



## IH16 089B + T8 + S6 ORBITER WING SURFACE

(RPQW13)

SYMBOL	RN/L	2Y/B	HAW/HT
○	1.990	.800	.900
□	4.550		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.069

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

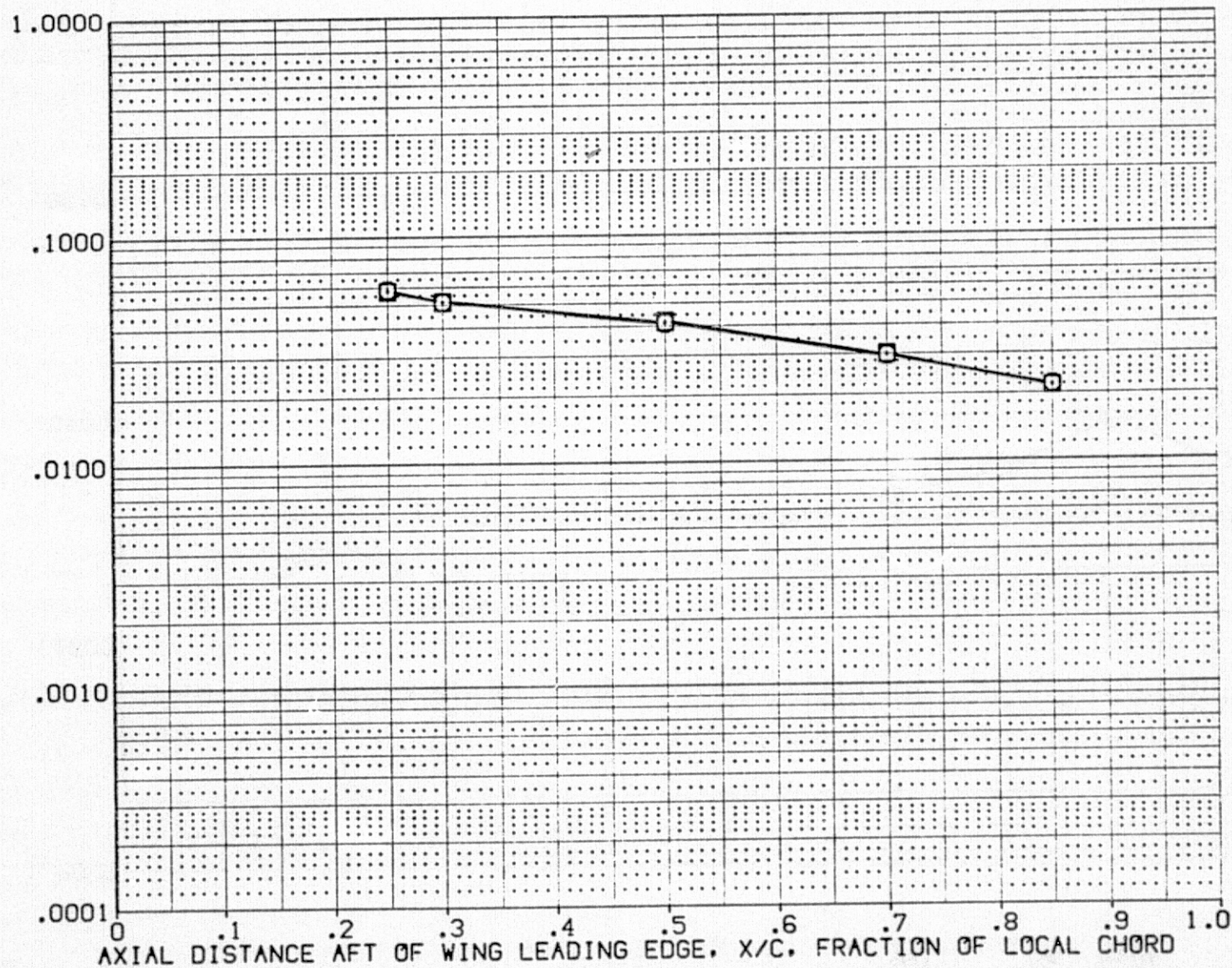


FIG. 18 INTEGRATED VEHICLE - ORBITER SURFACE RN VARIATION ALPHA = 0 DH=.069



IH16 089B + T8 + S6 ORBITER FUSELAGE SURFACE (RPQB14)

SYMBOL	RN/L	Y(BP)	HAW/HT
○	2.000	.000	.900
□	4.470		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
ALPHA	-5.000
DELTAH	.069

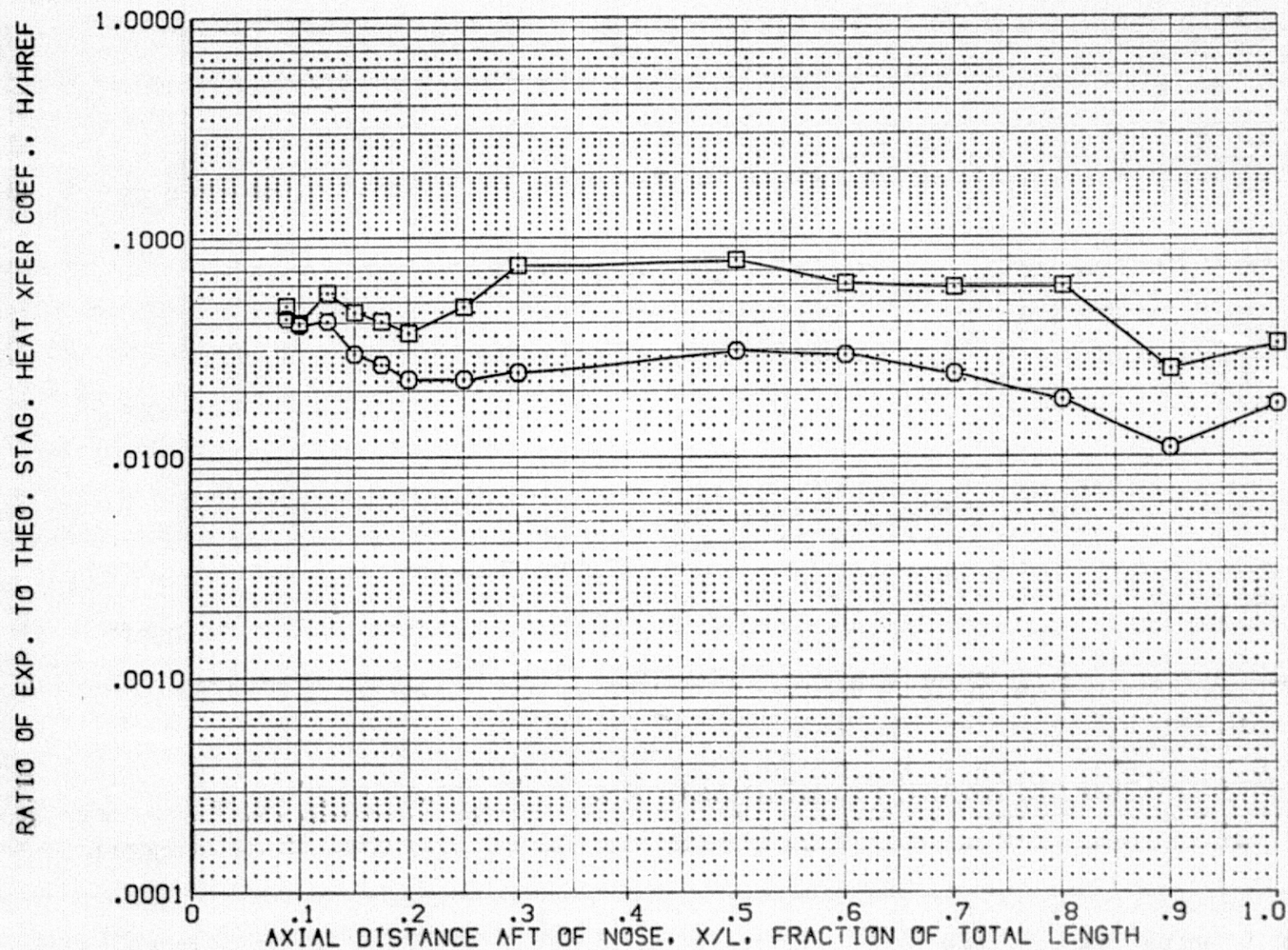


FIG. 19 INTEGRATED VEHICLE - ORBITER SURFACE RN VARIATION ALPHA = -5 DH = .069



# IH16 089B + T8 + S6 ORBITER FUSELAGE SURFACE (RPQB14)

SYMBOL    RN/L    Y(BP)    HAW/HT  
 ○        2.000    70.000    .900  
 □        4.470

PARAMETRIC VALUES  
 MACH        3.700    ALPHA        -5.000  
 BETA        .000    DELTAH       .069

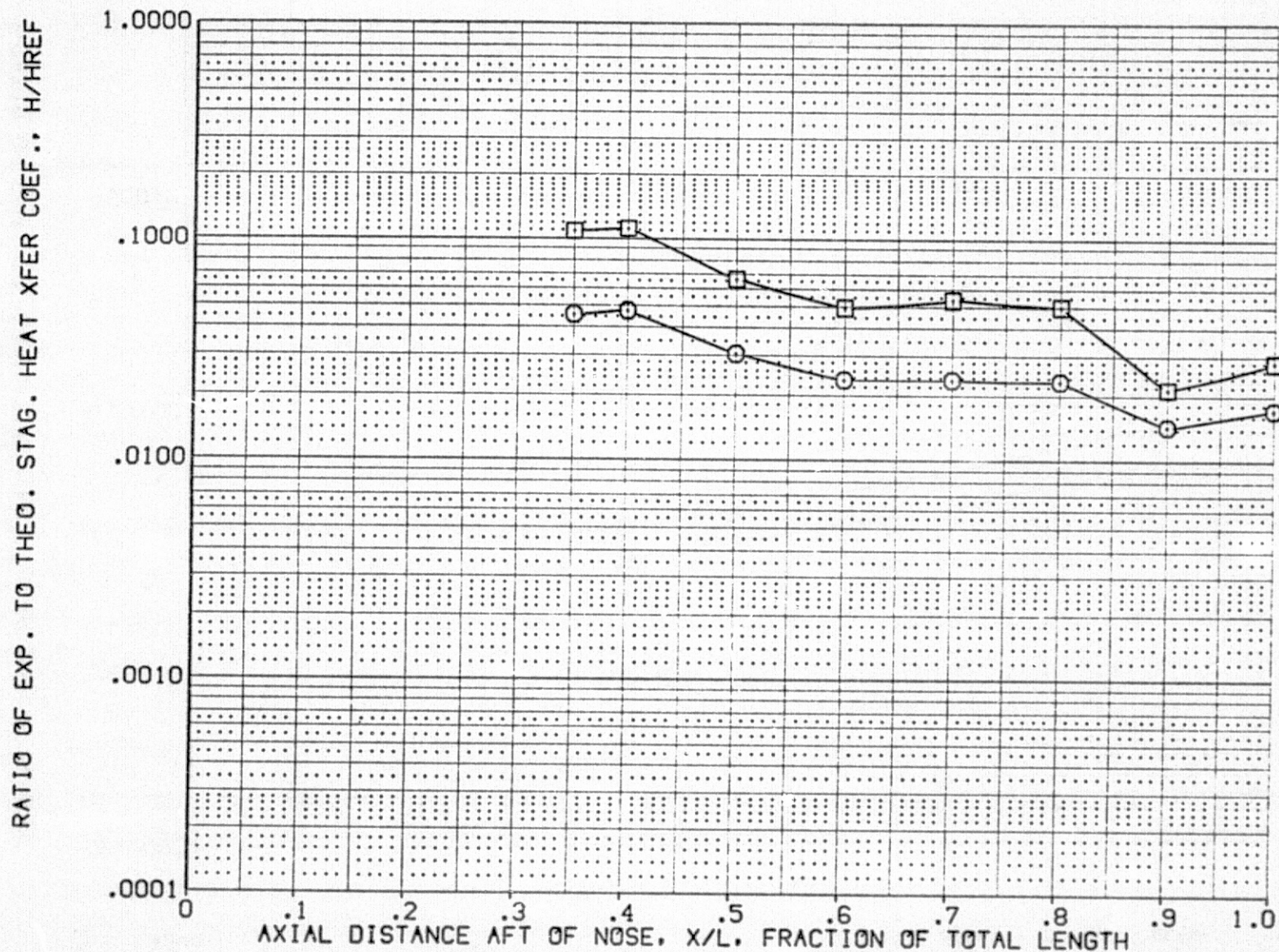


FIG. 19 INTEGRATED VEHICLE - ORBITER SURFACE RN VARIATION ALPHA = -5 DH = .069



SYMBOL	RN/L	2Y/B	HAW/HT
○	2.000	.400	.900
□	4.470		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	-5.000
BETA	.000	DELTAH	.069

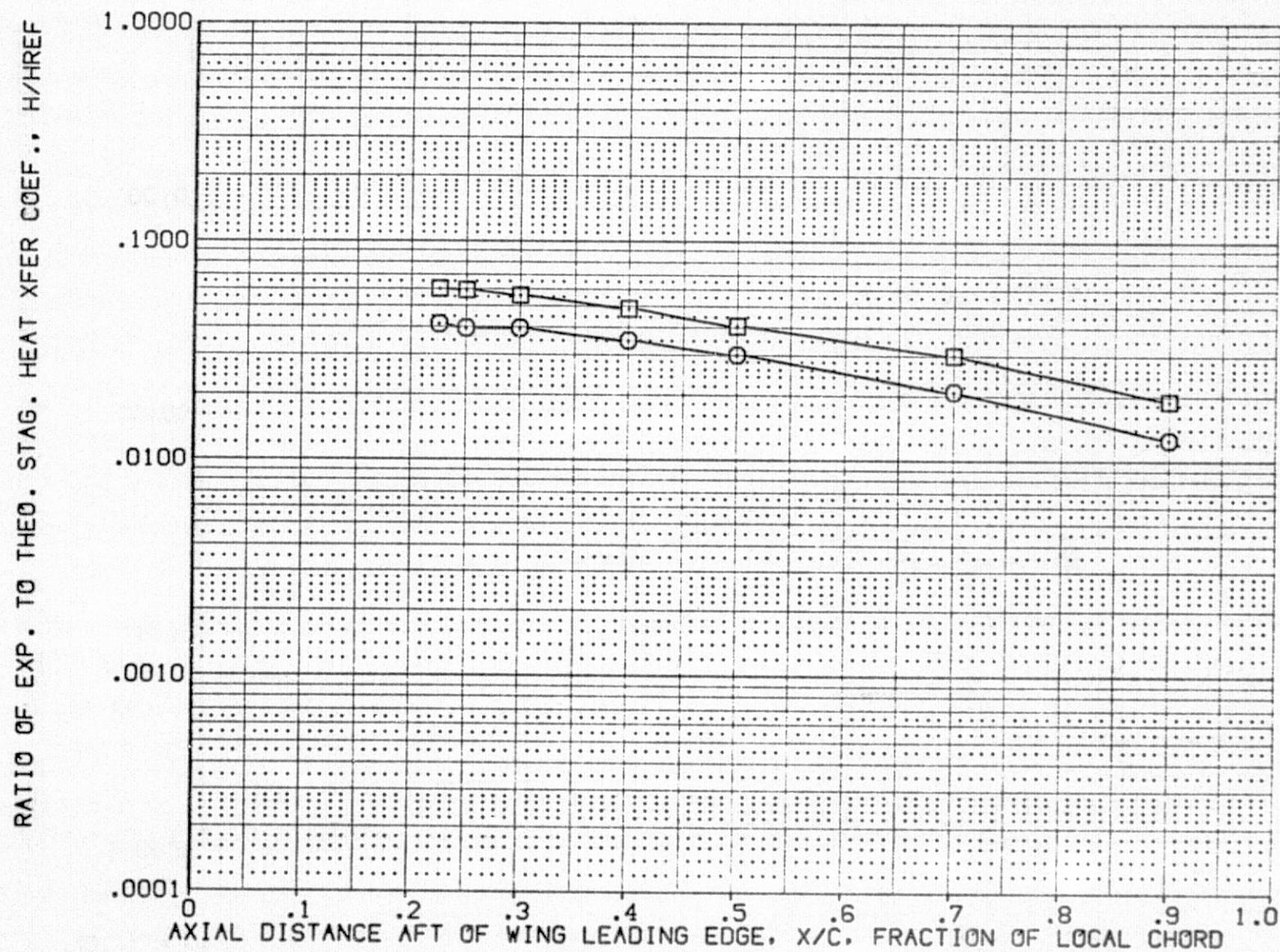


FIG. 19 INTEGRATED VEHICLE - ORBITER SURFACE RN VARIATION ALPHA = -5 DH = .069



IH16 089B + T8 + S6 ORBITER WING SURFACE

(RPQW14)

SYMBOL	RN/L	2Y/B	HAW/HT	PARAMETRIC VALUES		
				MACH	ALPHA	-5.000
○	2.000	.600	.900	BETA	.000	DELTAH
□	4.470					.069

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

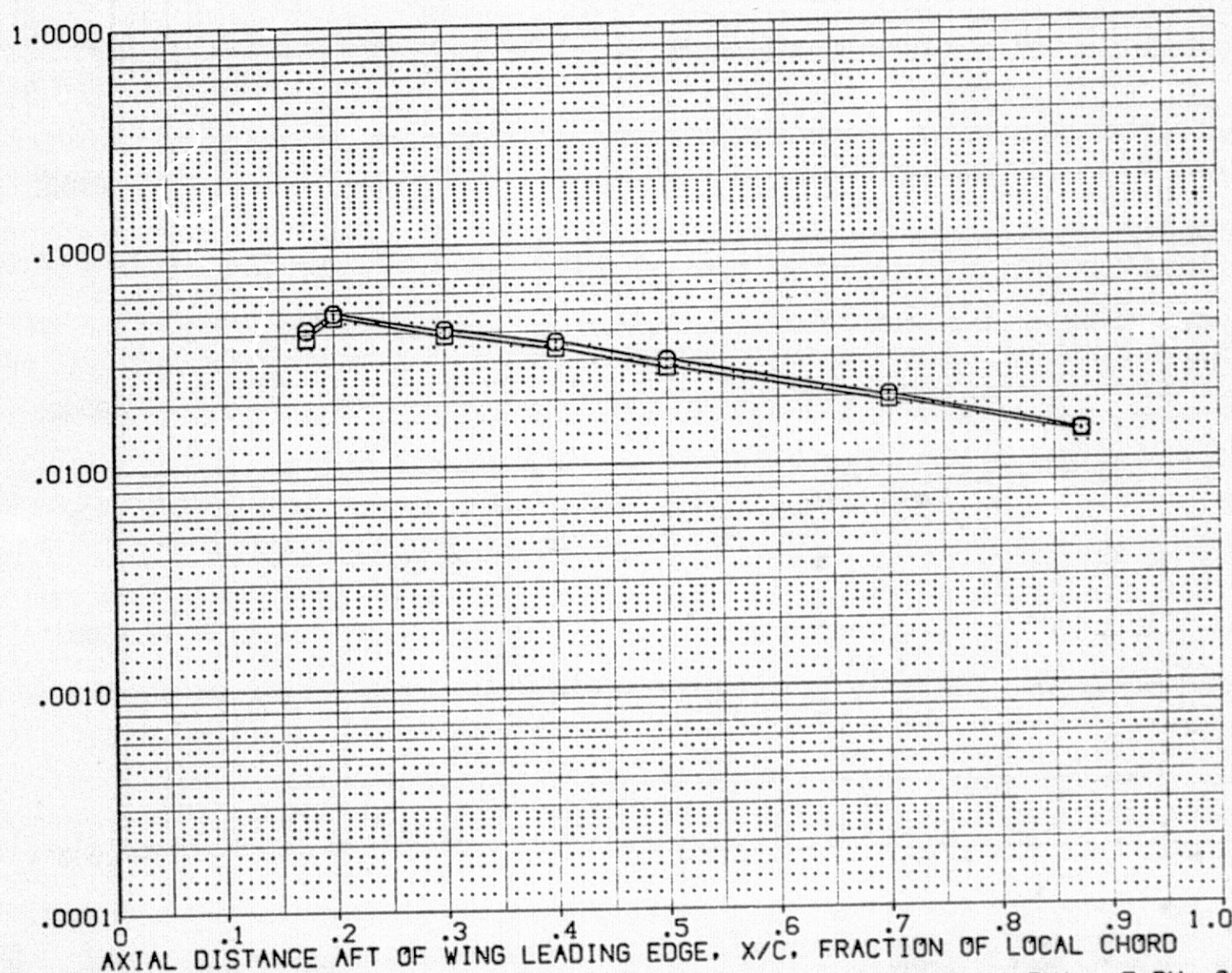


FIG. 19 INTEGRATED VEHICLE - ORBITER SURFACE RN VARIATION ALPHA = -5 DH = .069



SYMBOL	RN/L	2Y/B	HAW/HT
○	2.000	.800	.900
□	4.470		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	-5.000
BETA	.000	DELTAH	.069

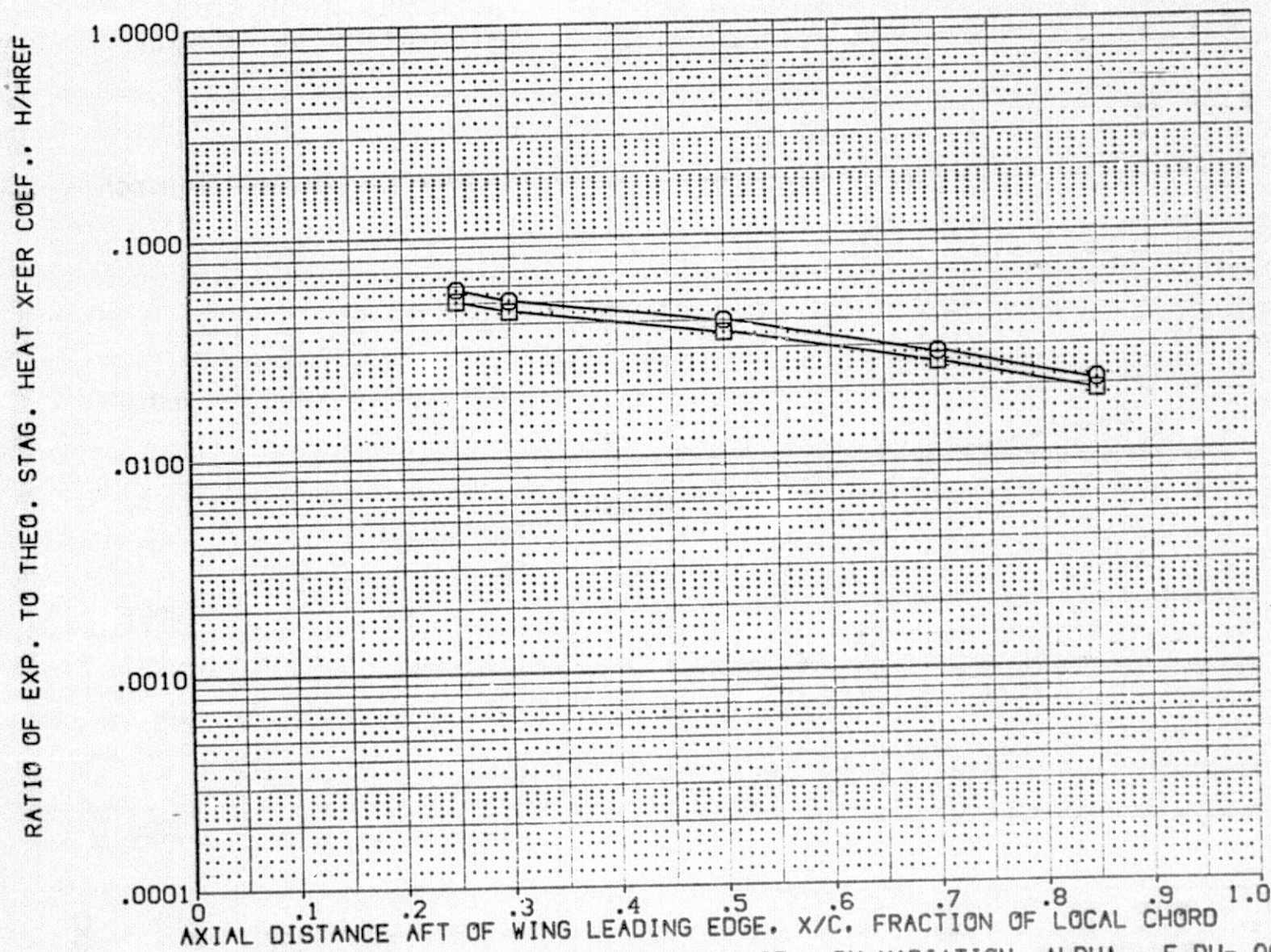


FIG. 19 INTEGRATED VEHICLE - ORBITER SURFACE RN VARIATION ALPHA = -5 DH = .069



# IH16 089B+T8+S6+GRIT ORBITER FUSELAGE SURFACE (RPQB15)

SYMBOL	RN/L	Y(BP)	HAW/HT
○	1.890	.000	.900
□	4.620		

PARAMETRIC VALUES		
MACH	3.700	ALPHA .000
BETA	.000	DELTA/H .175
GRITNO	25.000	

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

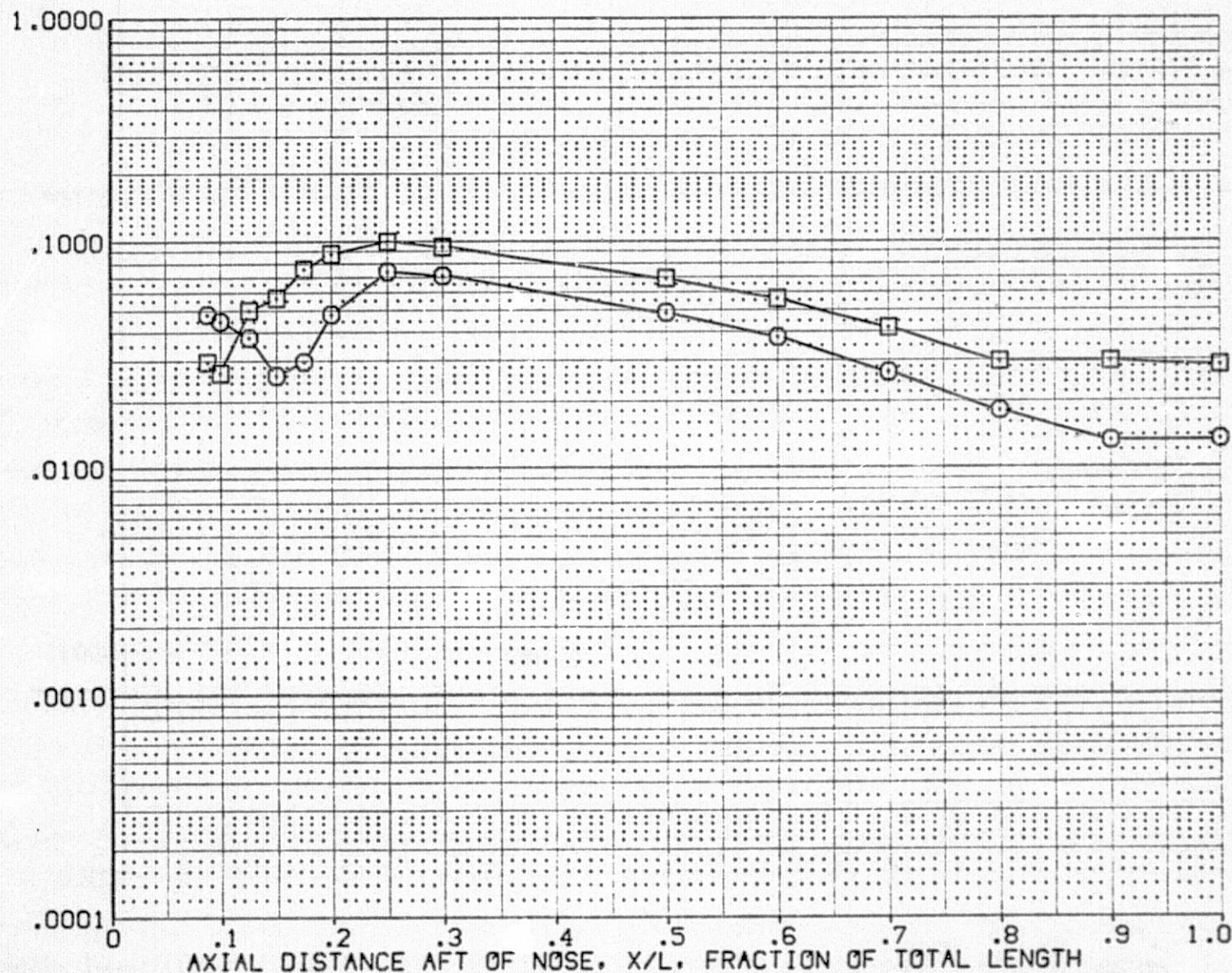


FIG. 20 INTEGRATED VEHICLE - ORBITER SURFACE RN VARIATION WITH GRIT DH=.175



# IH16 089B+T8+S6+GRIT ORBITER FUSELAGE SURFACE (RPQB15)

SYMBOL	RN/L	Y(BP)	HAW/HT
○	1.890	70.000	.900
□	4.620		

PARAMETRIC VALUES		
MACH	3.700	ALPHA
BETA	.000	DELTAH
GRITNO	25.000	
		.000
		.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

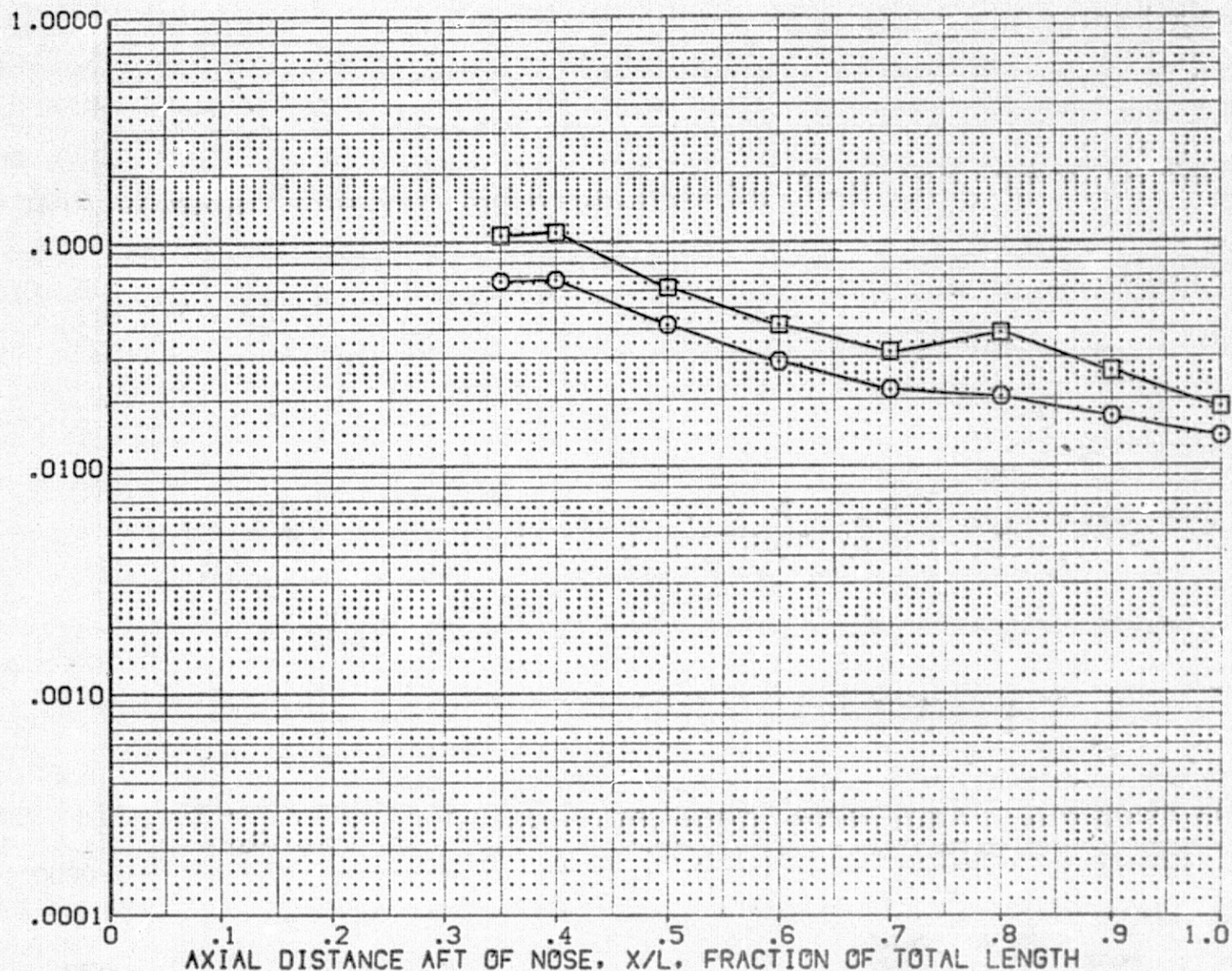


FIG. 20 INTEGRATED VEHICLE - ORBITER SURFACE RN VARIATION WITH GRIT DH=.175



## IH16 089B+T8+S6+GRIT ORBITER WING SURFACE

(RPQW15)

SYMBOL	RN/L	2Y/B	HAW/HT
○	1.890	.400	.900
□	4.620		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175
GRITNO	25.000		

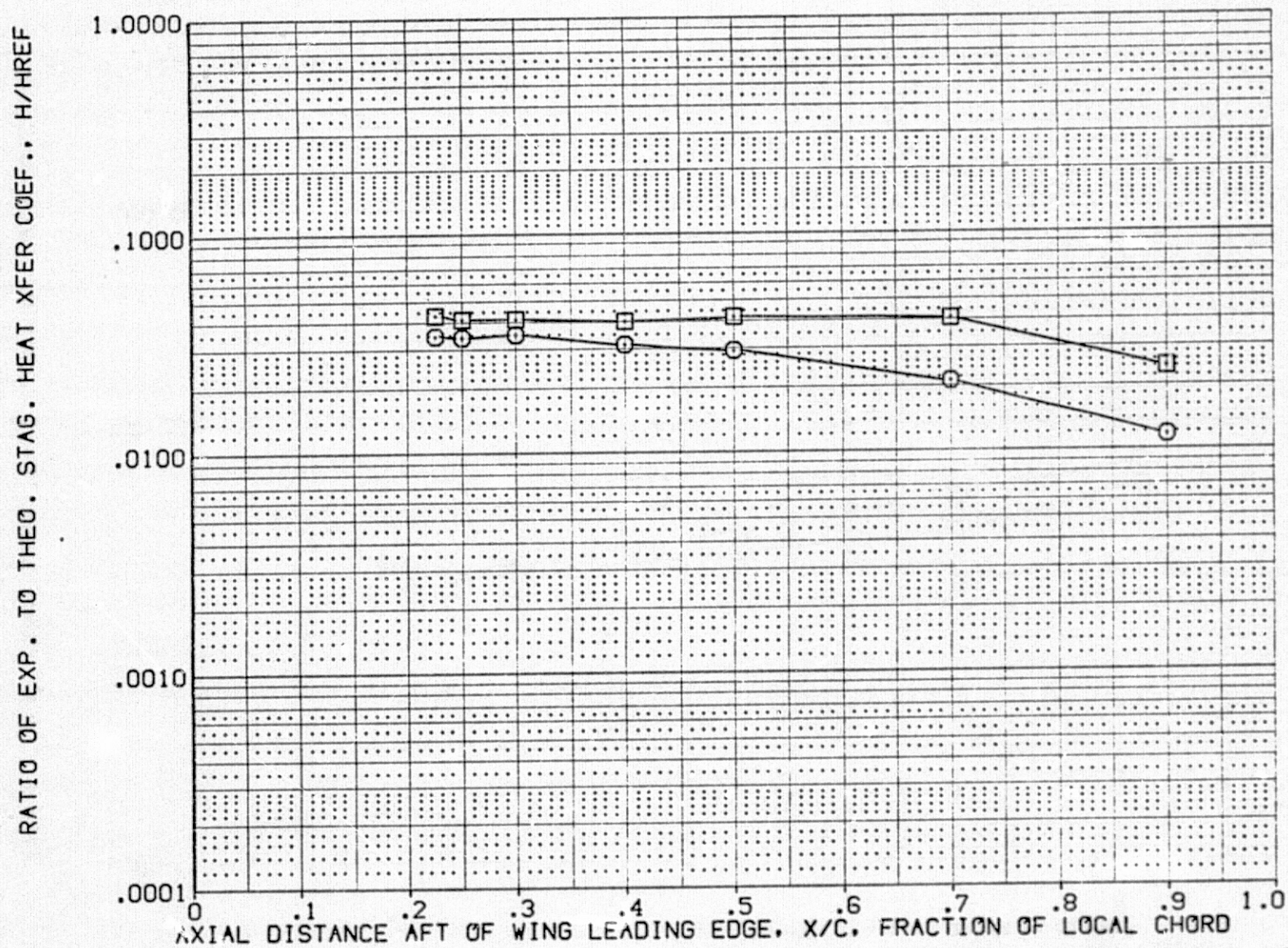


FIG. 20 INTEGRATED VEHICLE - ORBITER SURFACE RN VARIATION WITH GRIT DH=.175



SYMBOL	RN/L	2Y/B	HAW/HT
○	1.890	.600	.900
□	4.620		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175
GRITNO	25.000		

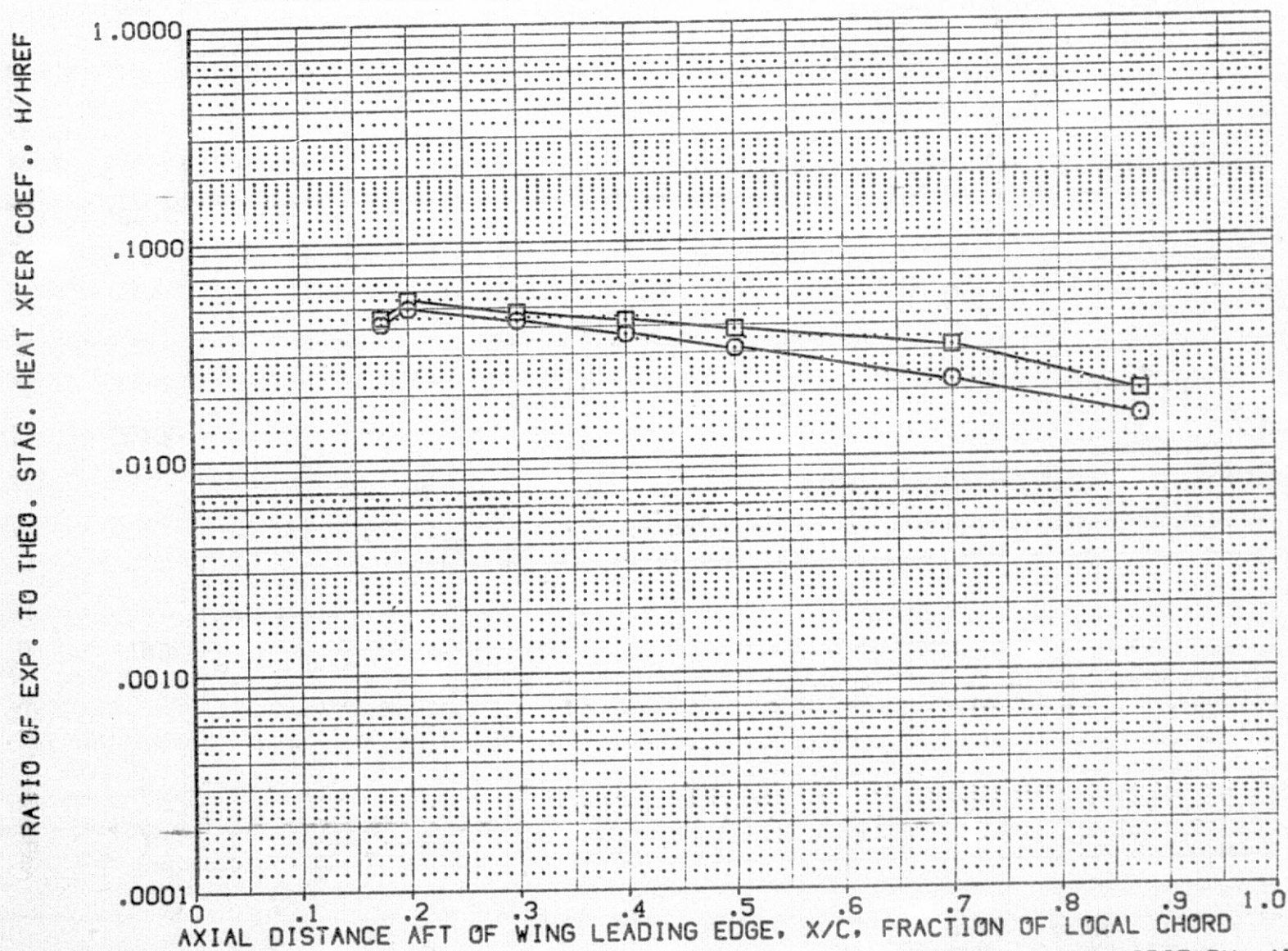


FIG. 20 INTEGRATED VEHICLE - ORBITER SURFACE RN VARIATION WITH GRIT DH=.175



## IH16 089B+T8+S6+GRIT ORBITER WING SURFACE

(RPQW15)

SYMBOL	RN/L	2Y/B	HAW/HT
○	1.890	.800	.900
□	4.620		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175
GRITNO	25.000		

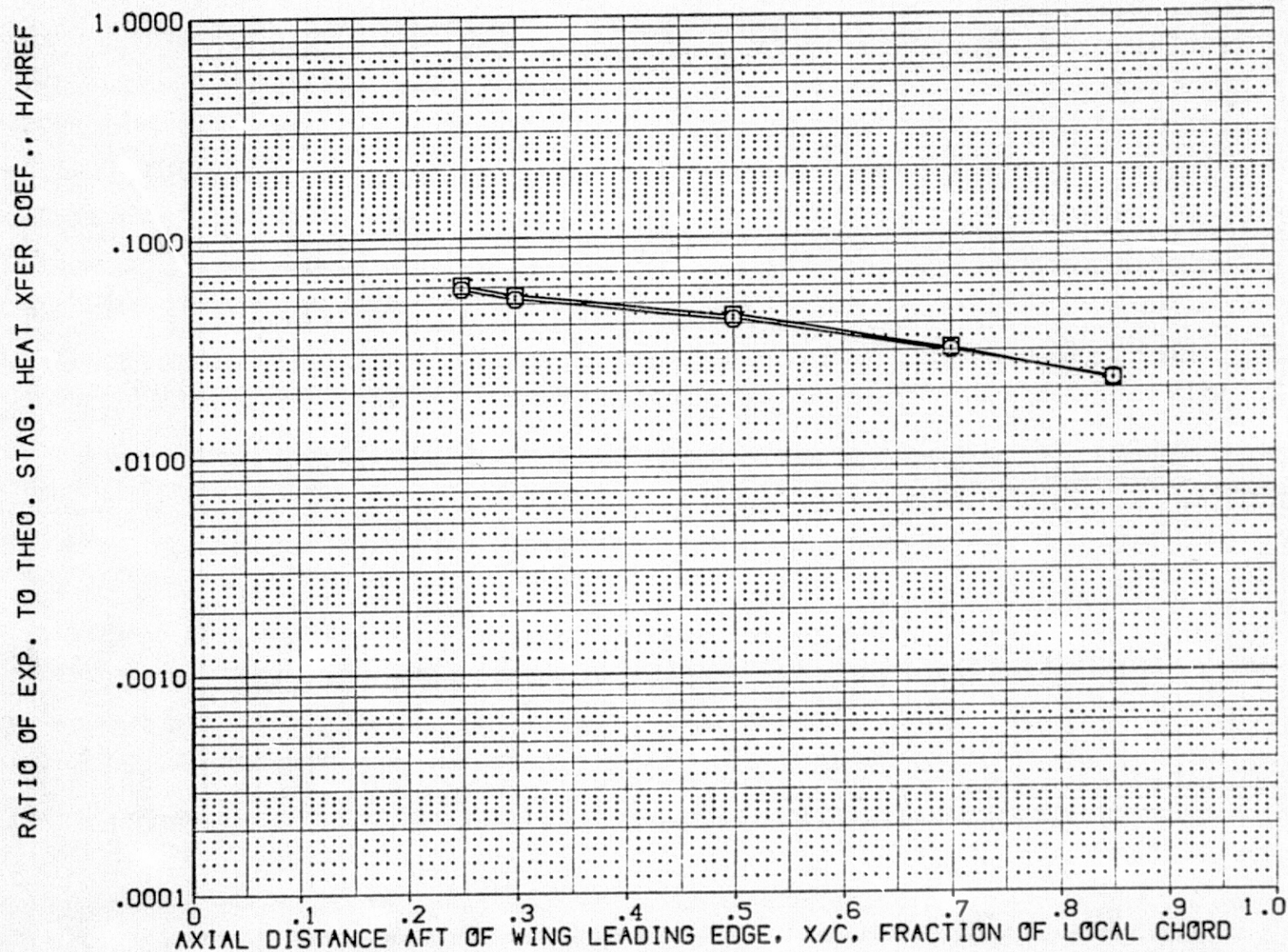


FIG. 20 INTEGRATED VEHICLE - ORBITER SURFACE RN VARIATION WITH GRIT DH=.175



IH16

089B

ORBITER FUSELAGE SURFACE (RPQB11)

SYMBOL

RN/L

Y(BP)

HAW/HT

MACH

PARAMETRIC VALUES

3.700

ALPHA

.000

○  
□1.910  
4.540

.000

.900

BETA

.000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

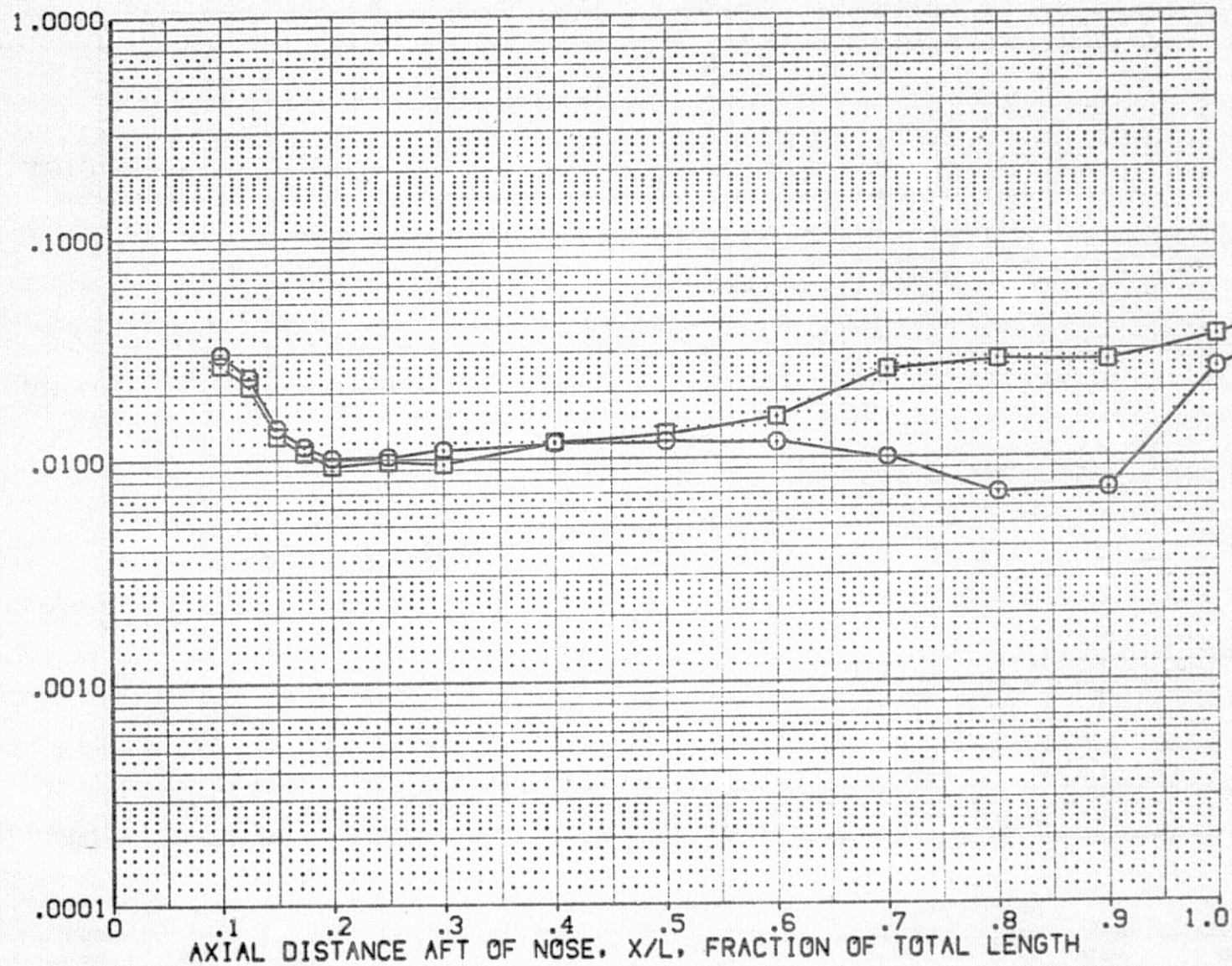


FIG. 21 ORBITER ALONE

RN VARIATION ALPHA = 0

PAGE

90



IH16 089B

ORBITER FUSELAGE SURFACE (RPQB11)

SYMBOL	RN/L	Y(BP)	HAV/HT
○	1.910	70.000	.900
□	4.540		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000		

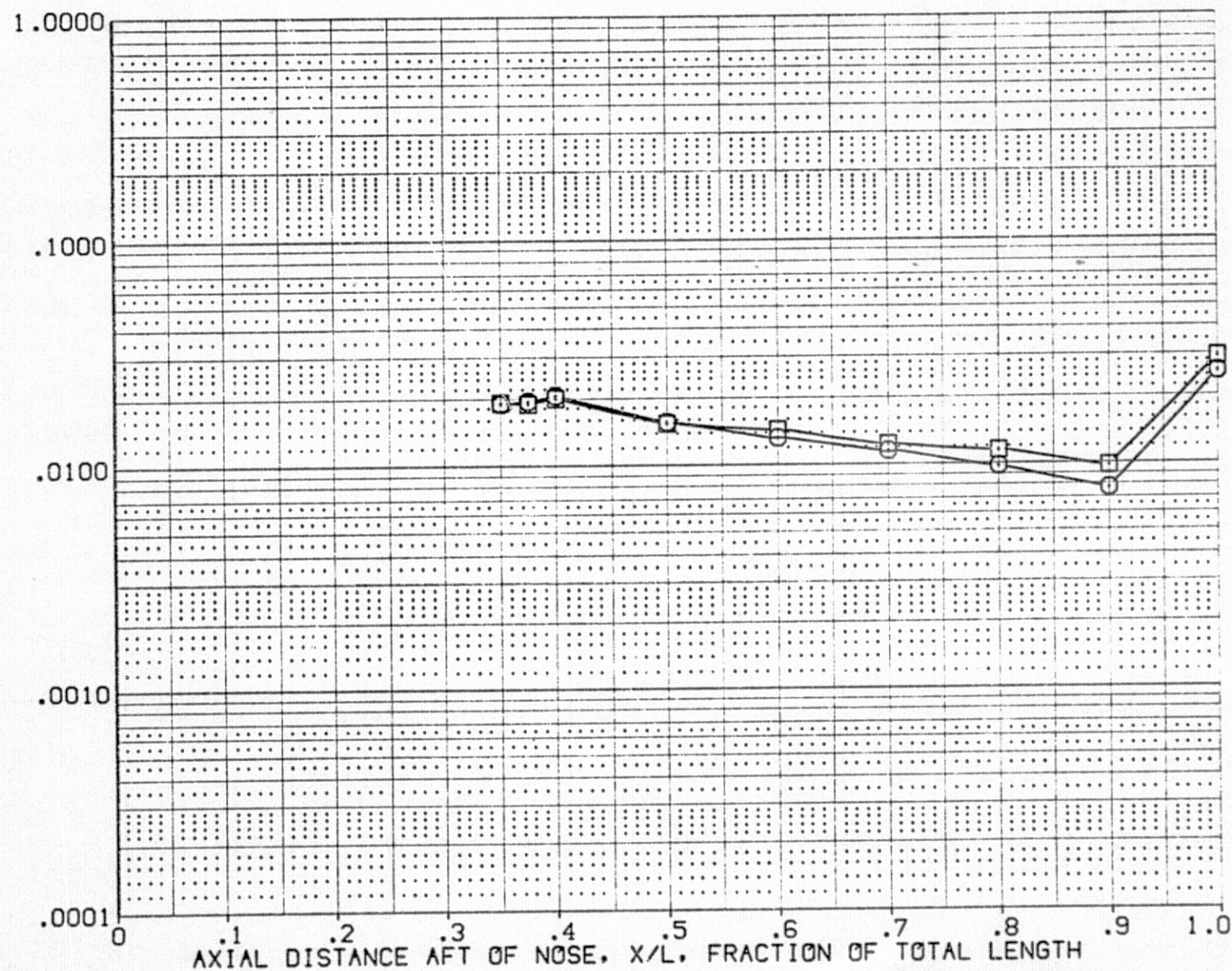
RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.  $H/H_{REF}$ 

FIG. 21 ORBITER ALONE

RN VARIATION ALPHA = 0



IH16

089B

ORBITER WING SURFACE

(RPQW11)

SYMBOL  
○  
□RN/L  
1.910  
4.5402Y/B  
.400HAW/HT  
.900MACH  
BETAPARAMETRIC VALUES  
3.700 ALPHA  
.000

.000

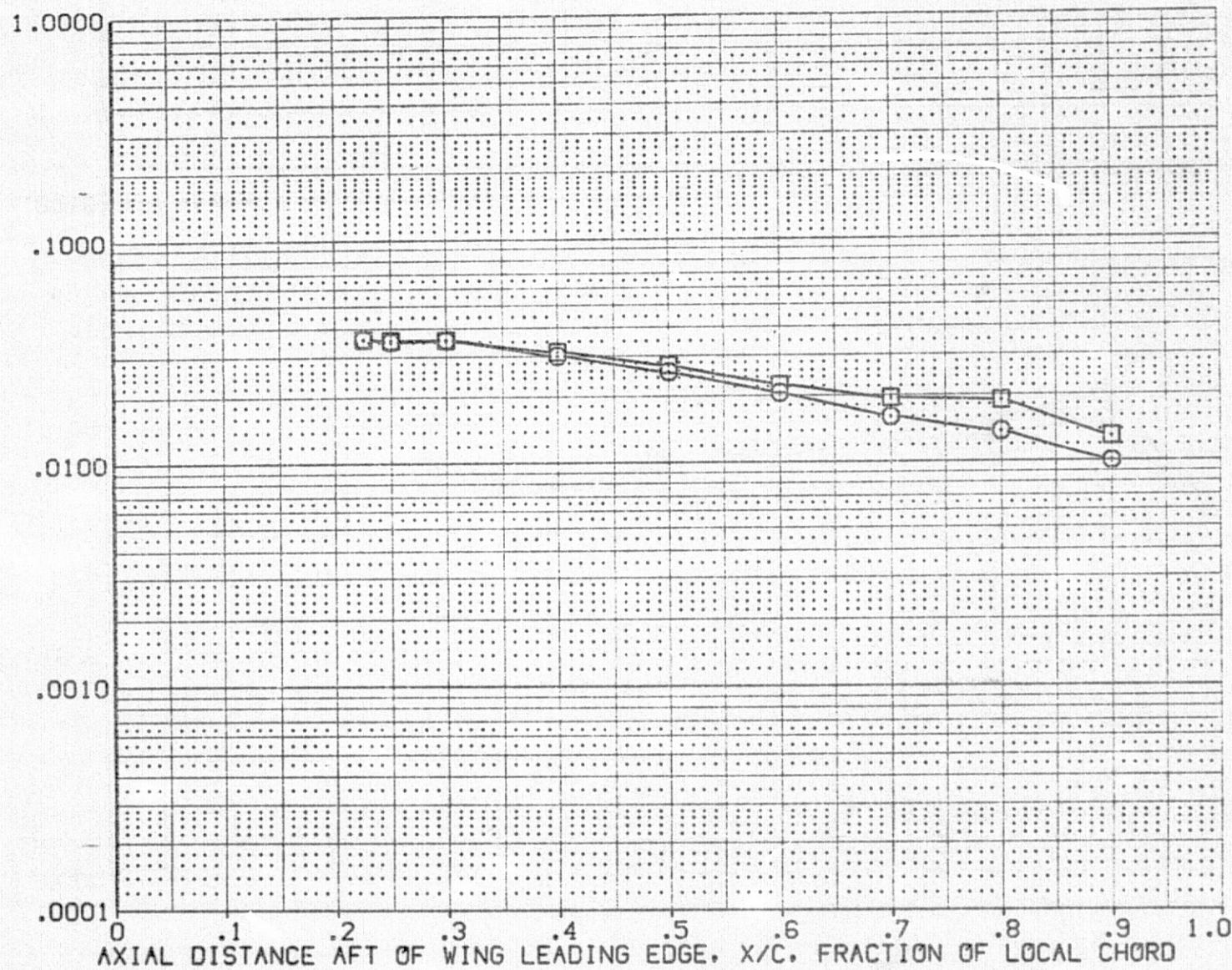
RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $H/H_{REF}$ 

FIG. 21 ORBITER ALONE

RN VARIATION ALPHA = 0

PAGE

92





IH16

089B

ORBITER WING SURFACE

(RPQW11)

SYMBOL

RN/L

2Y/B

HAW/HT

MACH  
BETA

PARAMETRIC VALUES

3.700  
.000

ALPHA

.000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

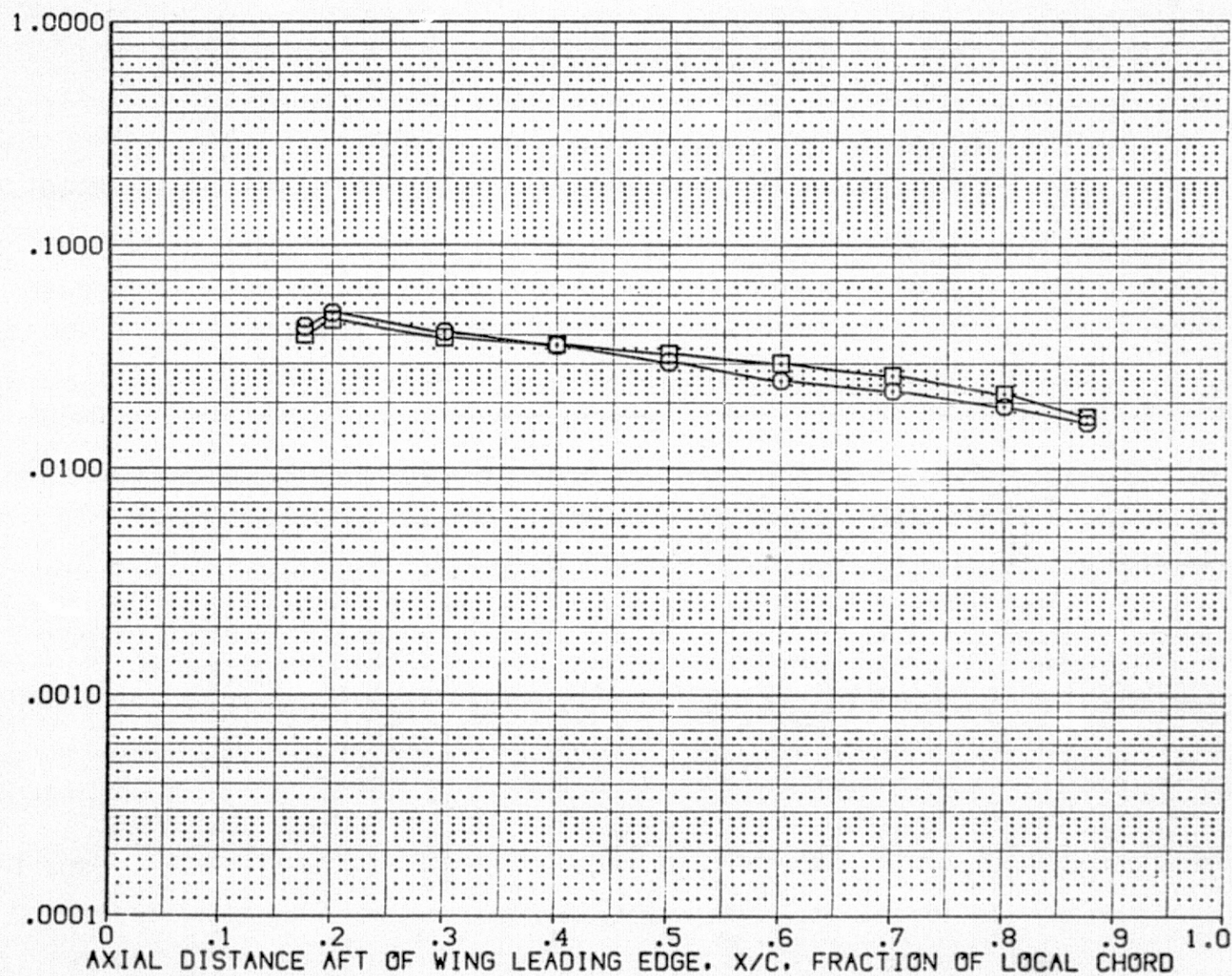


FIG. 21 ORBITER ALONE

RN VARIATION ALPHA = 0



IH16 089B

ORBITER WING SURFACE

(RPQW11)

SYMBOL	RN/L	2Y/B	HAW/HT
○	1.910	.800	.900
□	4.540		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000		

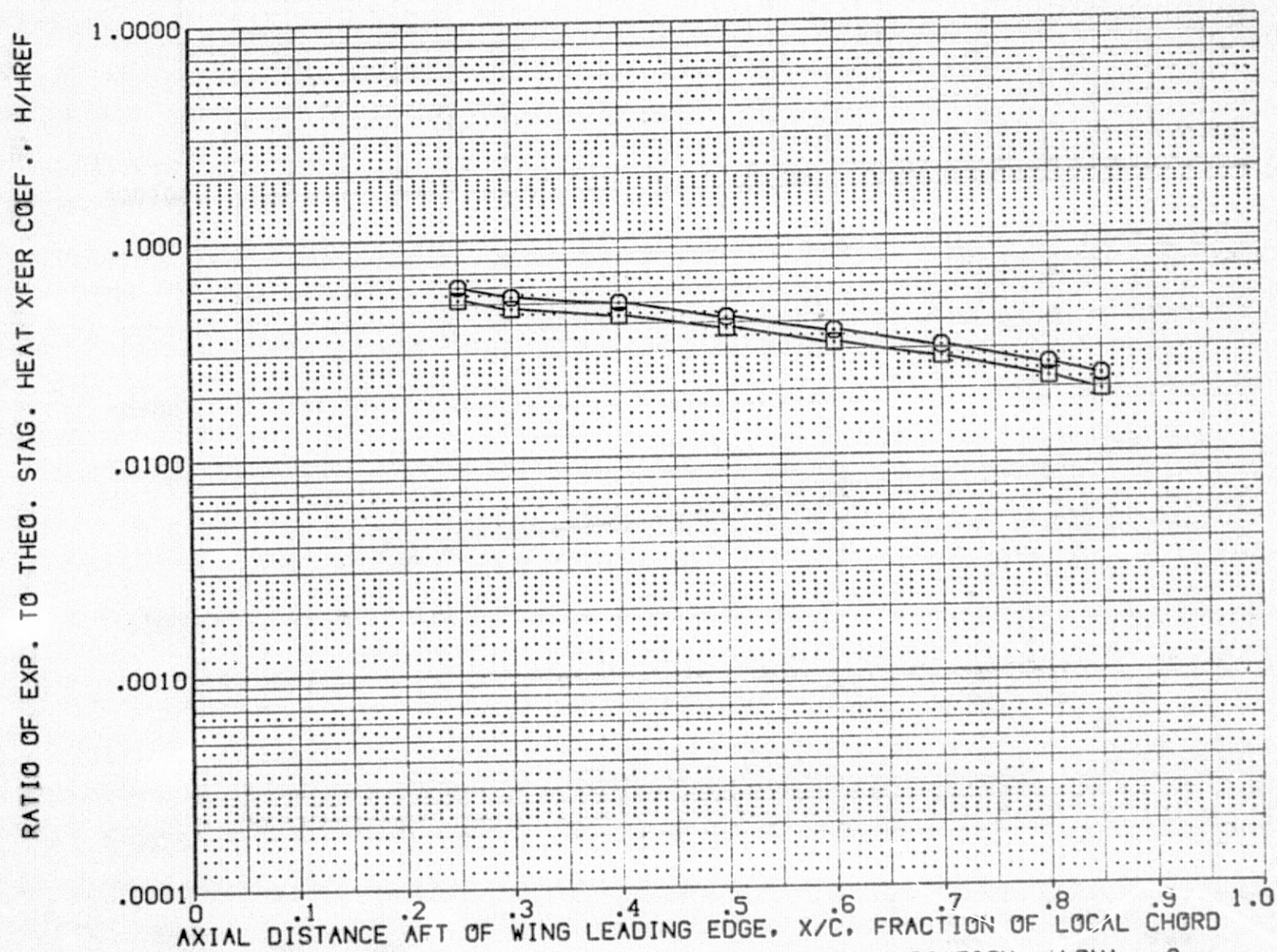


FIG. 21 ORBITER ALONE

RN VARIATION ALPHA = 0

PAGE

94



IH16 089B

## ORBITER FUSELAGE SURFACE (RPQB12)

SYMBOL	RN/L	Y(BP)	HAW/HT
○	1.950	.000	.900
□	4.560		

PARAMETRIC VALUES		
MACH	3.700	ALPHA
BETA	.000	-5.000

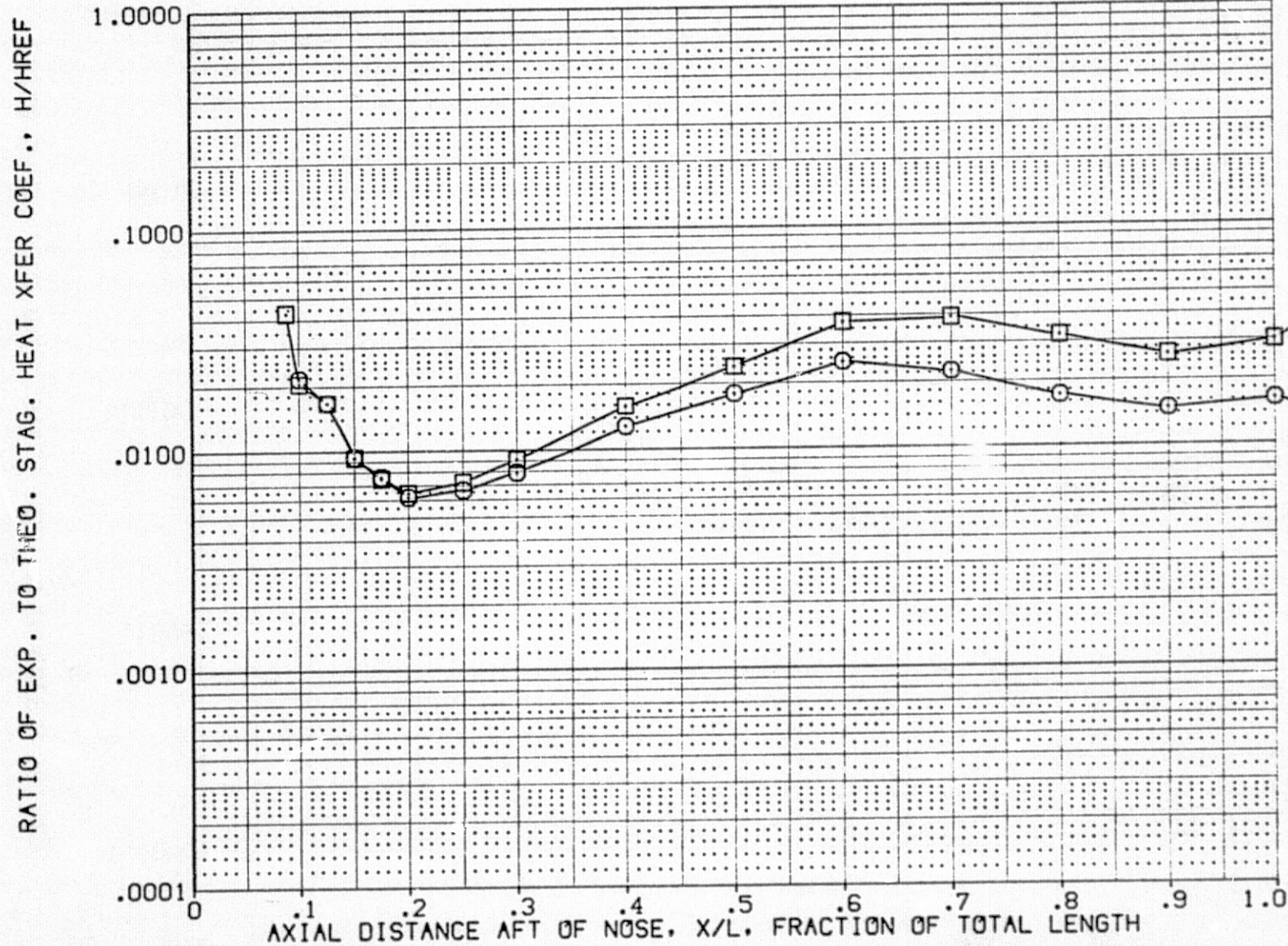


FIG. 22 ORBITER ALONE

RN VARIATION ALPHA = -5

SYMBOL	RN/L	Y(BP)	HAW/HT
○	1.950	70.000	.900
□	4.560		

PARAMETRIC VALUES		
MACH	3.700	ALPHA
BETA	.000	-5.000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

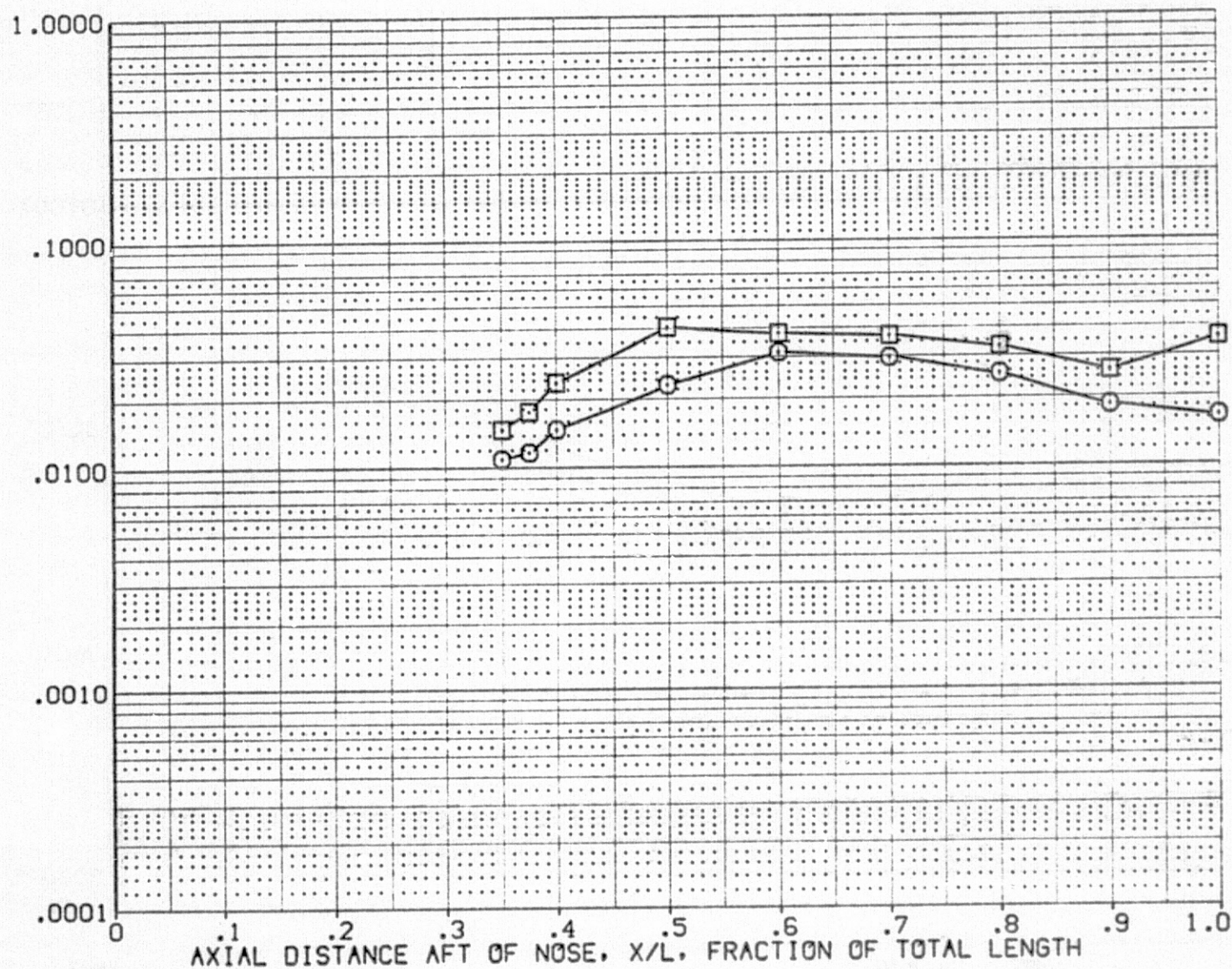


FIG. 22 ORBITER ALONE

RN VARIATION ALPHA = -5



IH16

089B

ORBITER WING SURFACE

(RPQW12)

SYMBOL

RN/L

2Y/B

HAW/HT

○  
□1.950  
4.560

.400

.900

MACH  
BETA

PARAMETRIC VALUES

3.700

ALPHA

-5.000

.000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

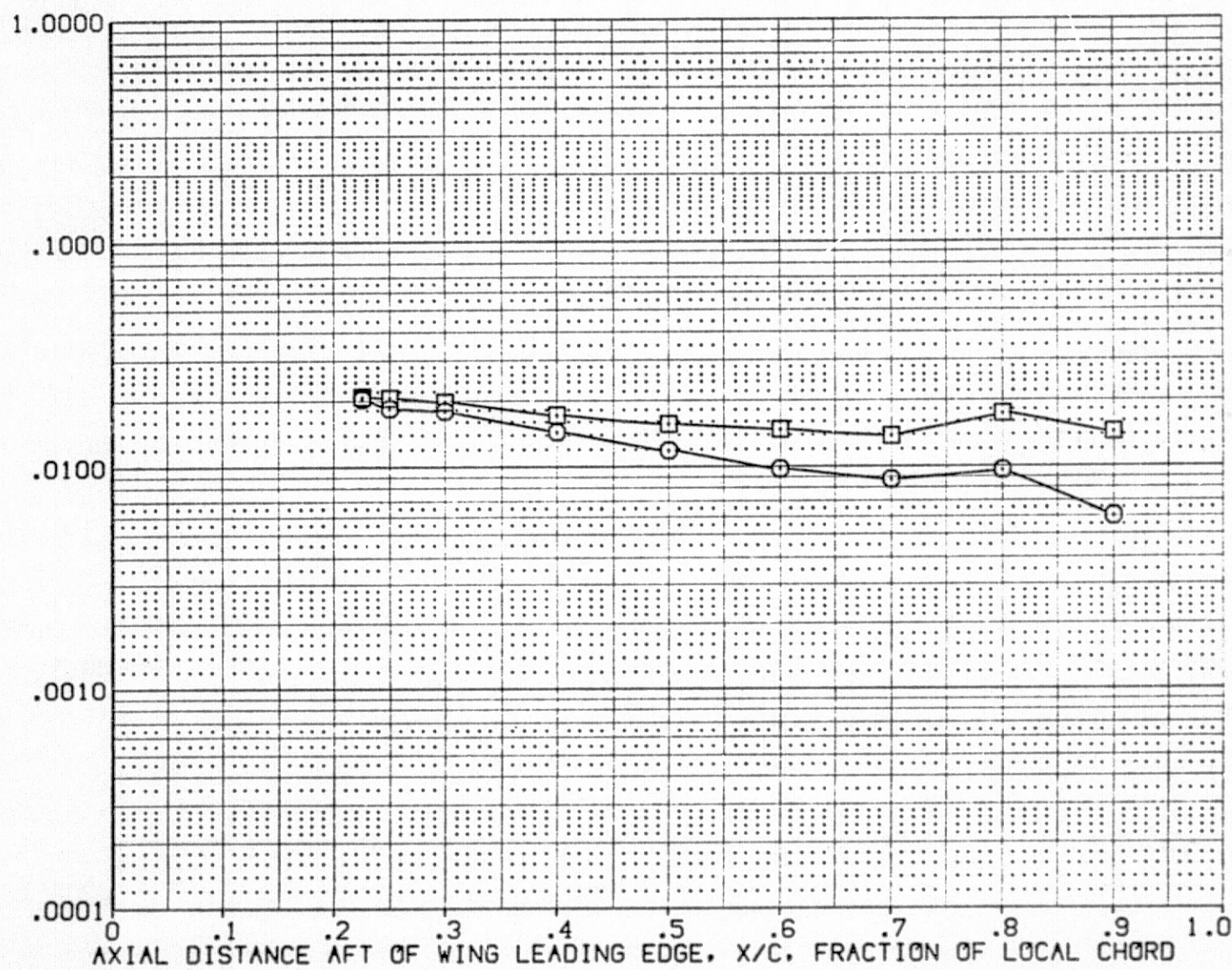


FIG. 22 ORBITER ALONE

RN VARIATION ALPHA = -5

IH16 089B

ORBITER WING SURFACE

(RPQW12)

SYMBOL	RN/L	2Y/B	HAW/HT
○	1.950	.600	.900
□	4.560		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
ALPHA	-5.000

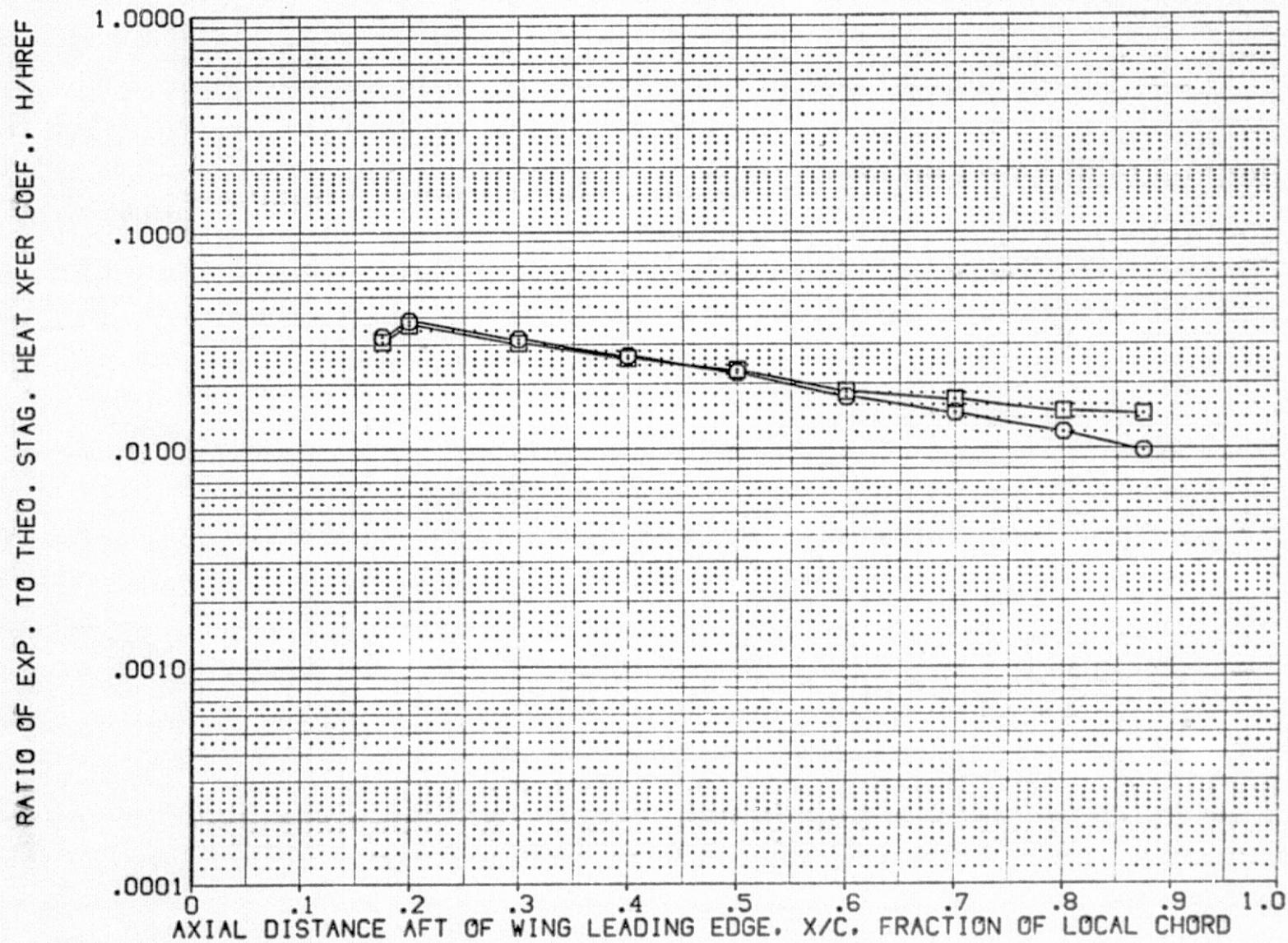


FIG. 22 ORBITER ALONE

RN VARIATION ALPHA = -5



IH16

089B

ORBITER WING SURFACE

(RPQW12)

SYMBOL

RN/L

2Y/B

HAW/HT

MACH

PARAMETRIC VALUES

3.700

ALPHA

-5.000

○  
□

1.950

.800

.900

BETA

.000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

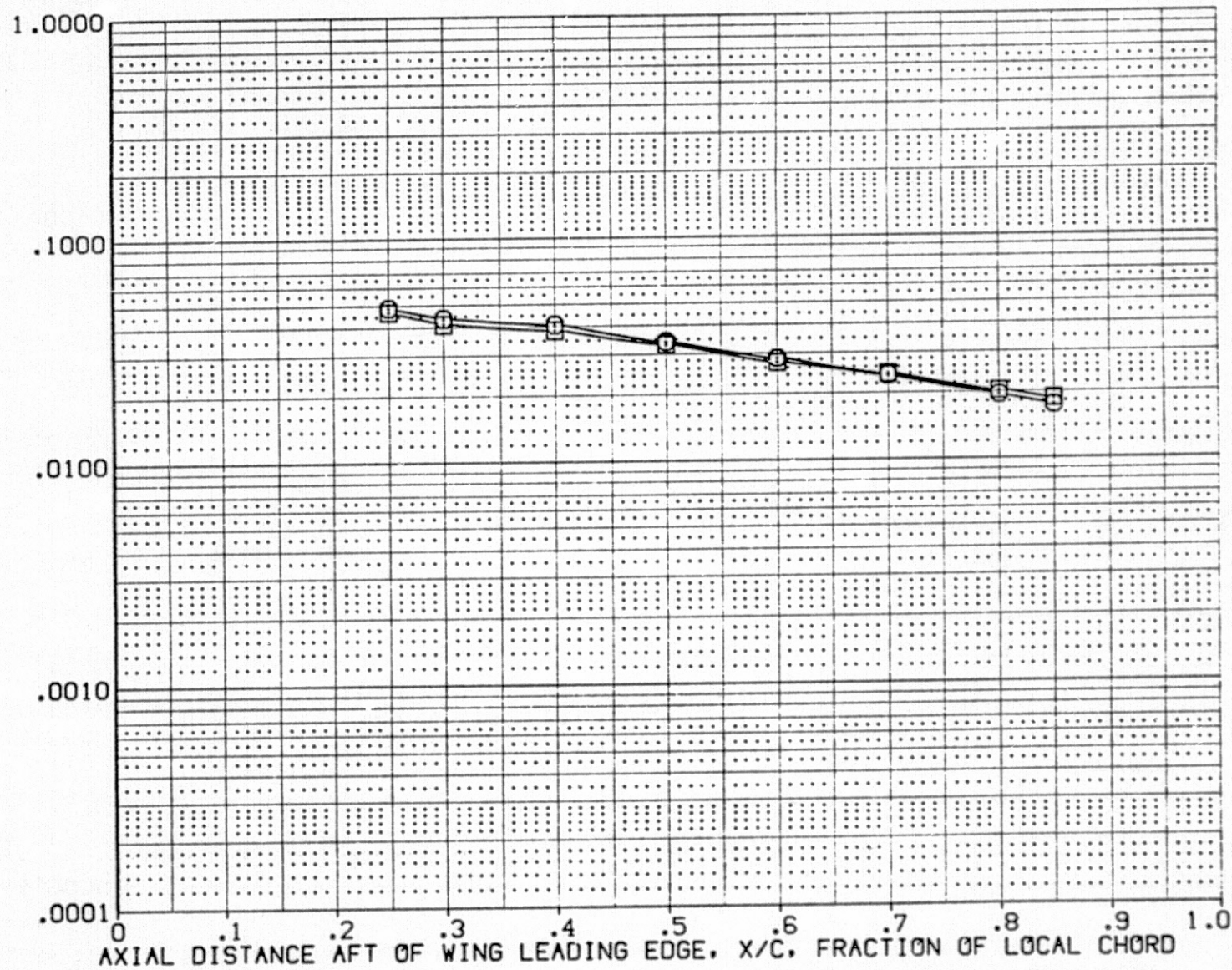


FIG. 22 ORBITER ALONE

RN VARIATION ALPHA = -5

IH16 089B + GRIT

ORBITER FUSELAGE SURFACE

(RPQB16)

SYMBOL

RN/L

Y(BP)

HAW/HT

MACH

PARAMETRIC VALUES

3.700

ALPHA

.000

○  
□

1.910

.000

.900

BETA

.000

GRITNO

25.000

4.570

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

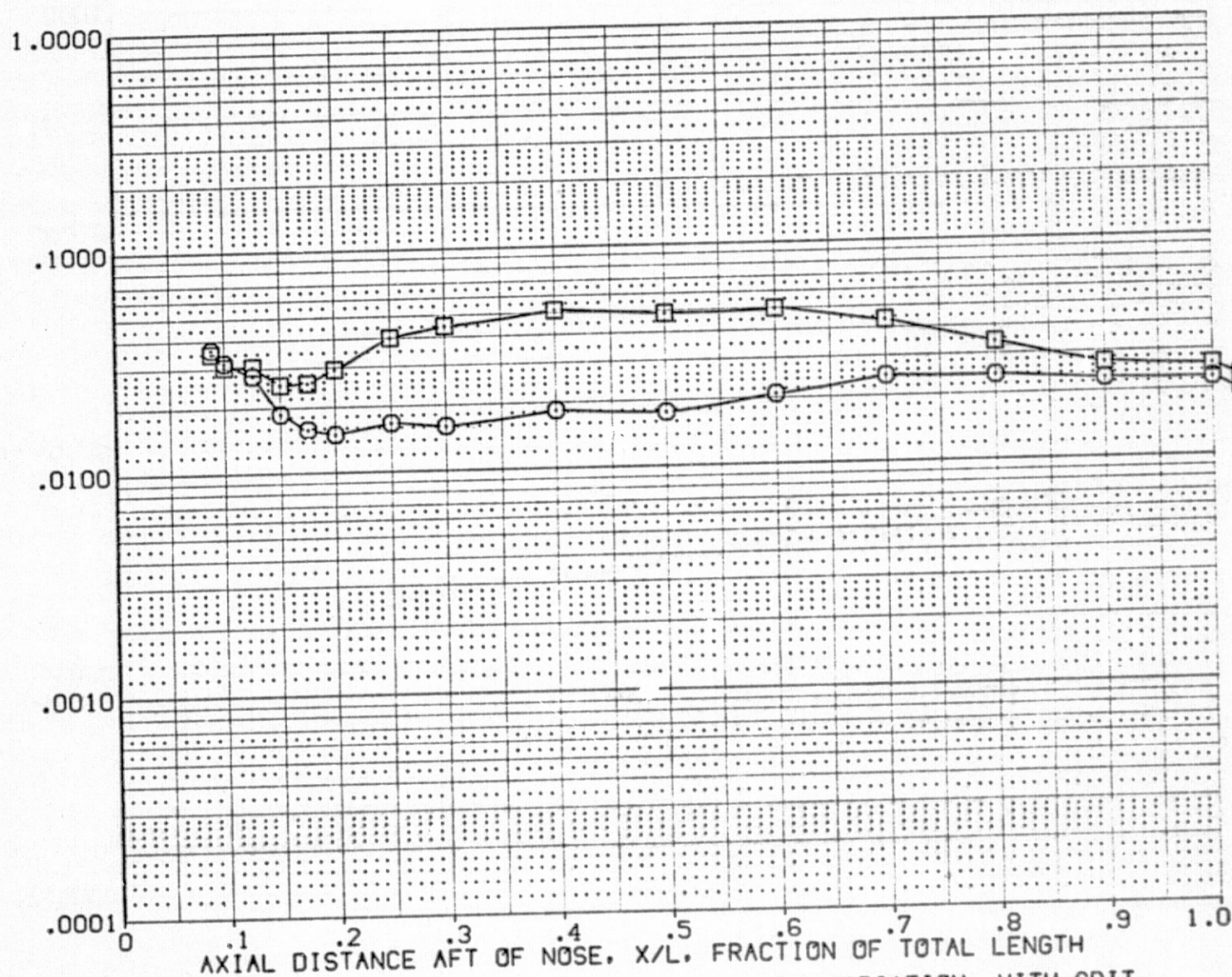


FIG. 23 ORBITER ALONE

RN VARIATION WITH GRIT



IH16 089B + GRIT

ORBITER FUSELAGE SURFACE

(RPQB16)

SYMBOL  
○  
□RN/L  
1.910  
4.570Y(BP)  
70.000HAW/HT  
.900MACH  
BETAPARAMETRIC VALUES  
3.700 ALPHA  
.000 GRITNO.000  
25.000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

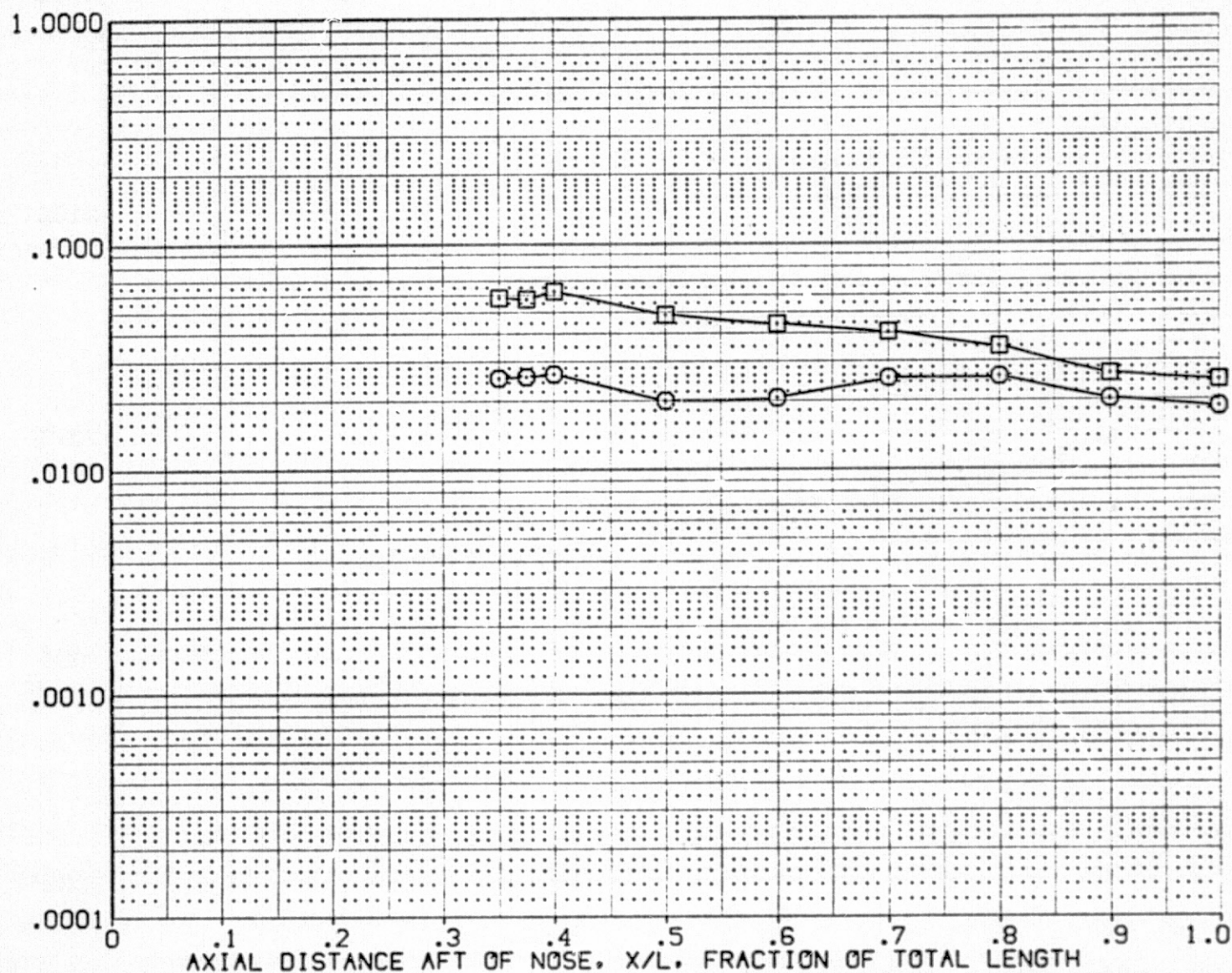


FIG. 23 ORBITER ALONE

RN VARIATION WITH GRIT

SYMBOL

○  
□

RN/L

1.910

2Y/B

.400

HAW/HT

.900

MACH

PARAMETRIC VALUES

3.700

ALPHA

.000

BETA

.000

GRITNO

25.000

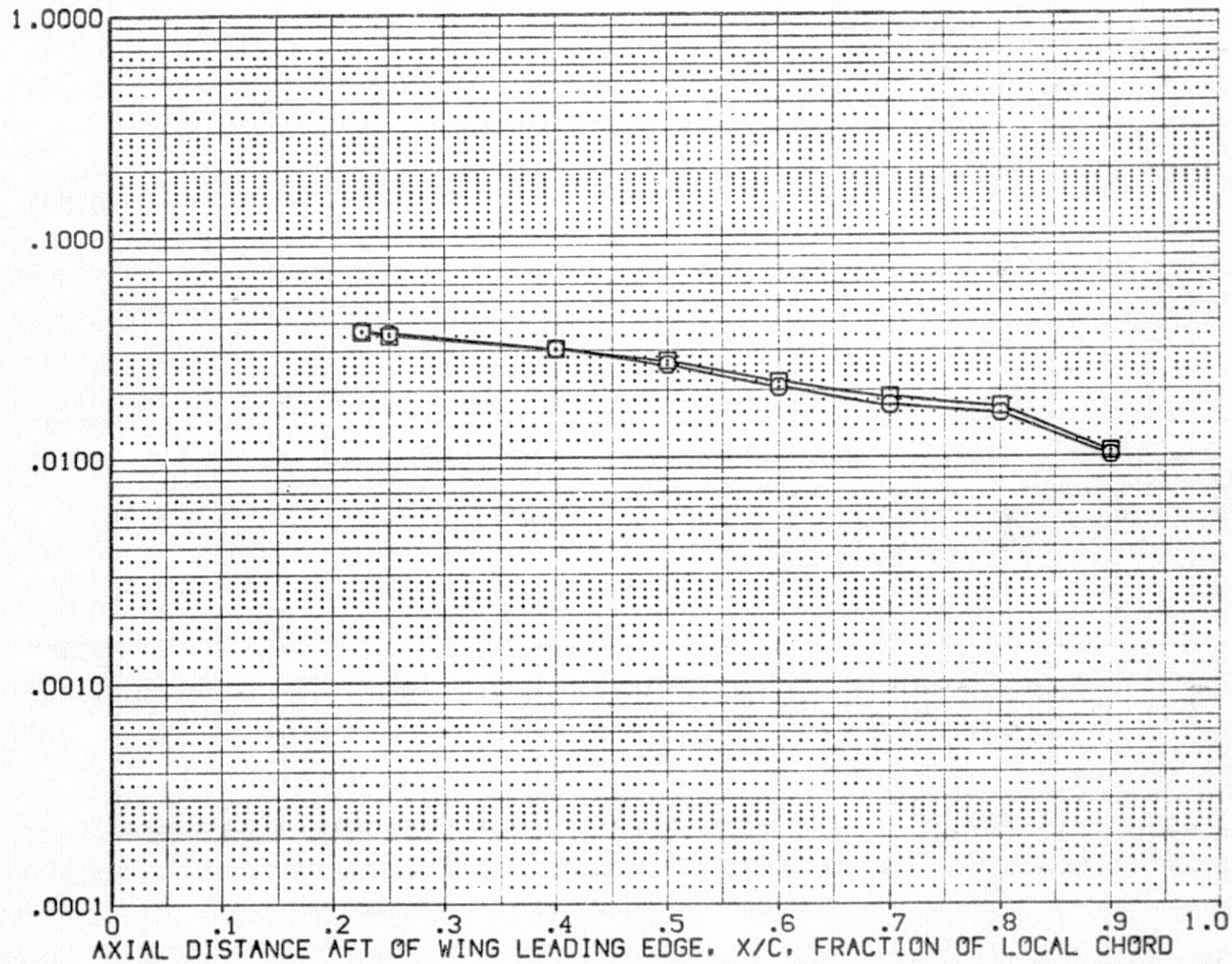
RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.  $H/H_{REF}$ 

FIG. 23 ORBITER ALONE

RN VARIATION WITH GRIT



IH16 089B + GRIT

ORBITER WING SURFACE

(RPQW16)

SYMBOL

RN/L

2Y/B

HAW/HT

MACH  
BETA

PARAMETRIC VALUES

3.700

ALPHA

.000

○  
□1.910  
4.570

.600

.900

.000

GRITNO

25.000

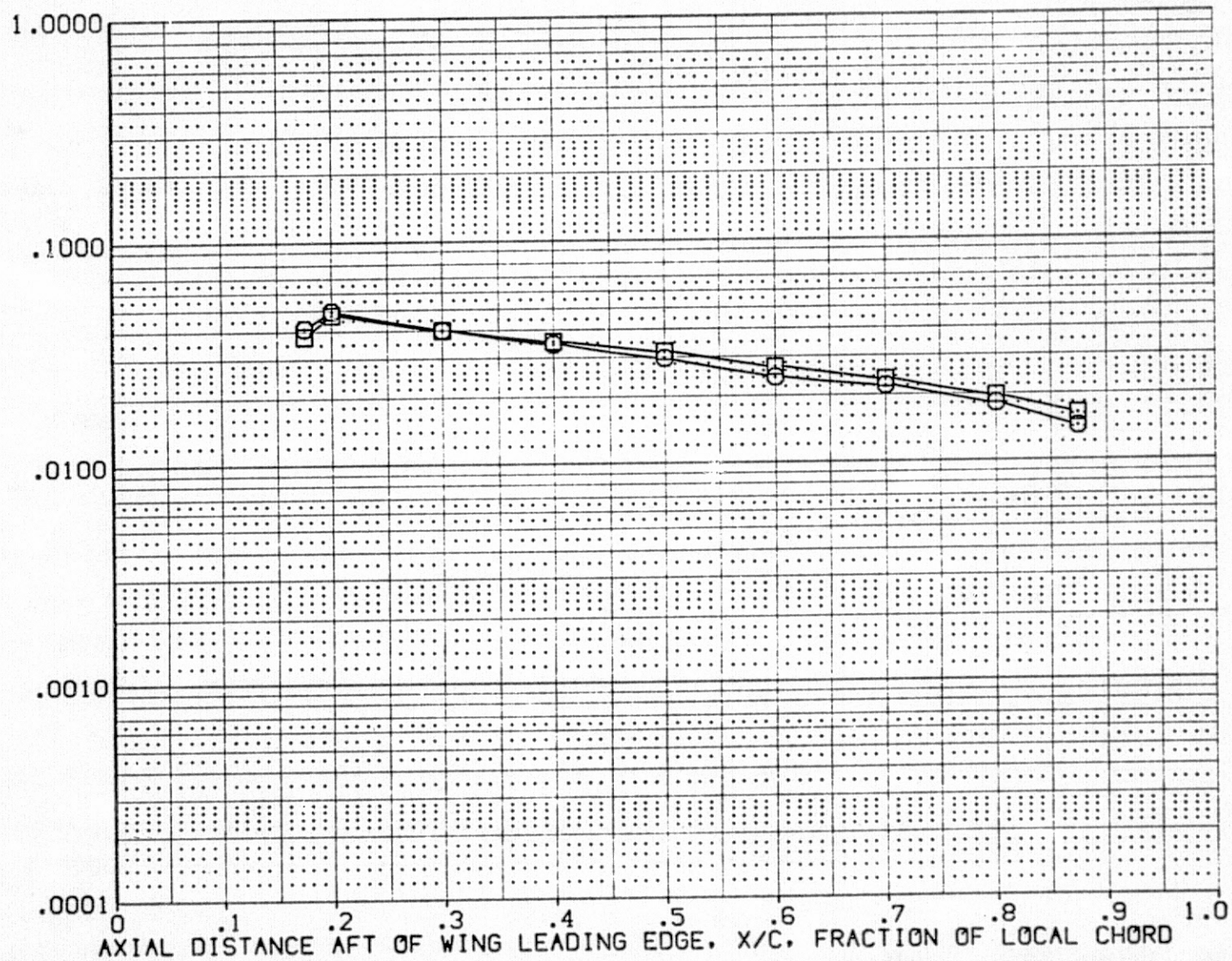
RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $H/H_{REF}$ 

FIG. 23 ORBITER ALONE

RN VARIATION WITH GRIT

SYMBOL  
○  
□RN/L  
1.910  
4.5702Y/B  
.800HAW/HT  
.900MACH  
BETA

PARAMETRIC VALUES

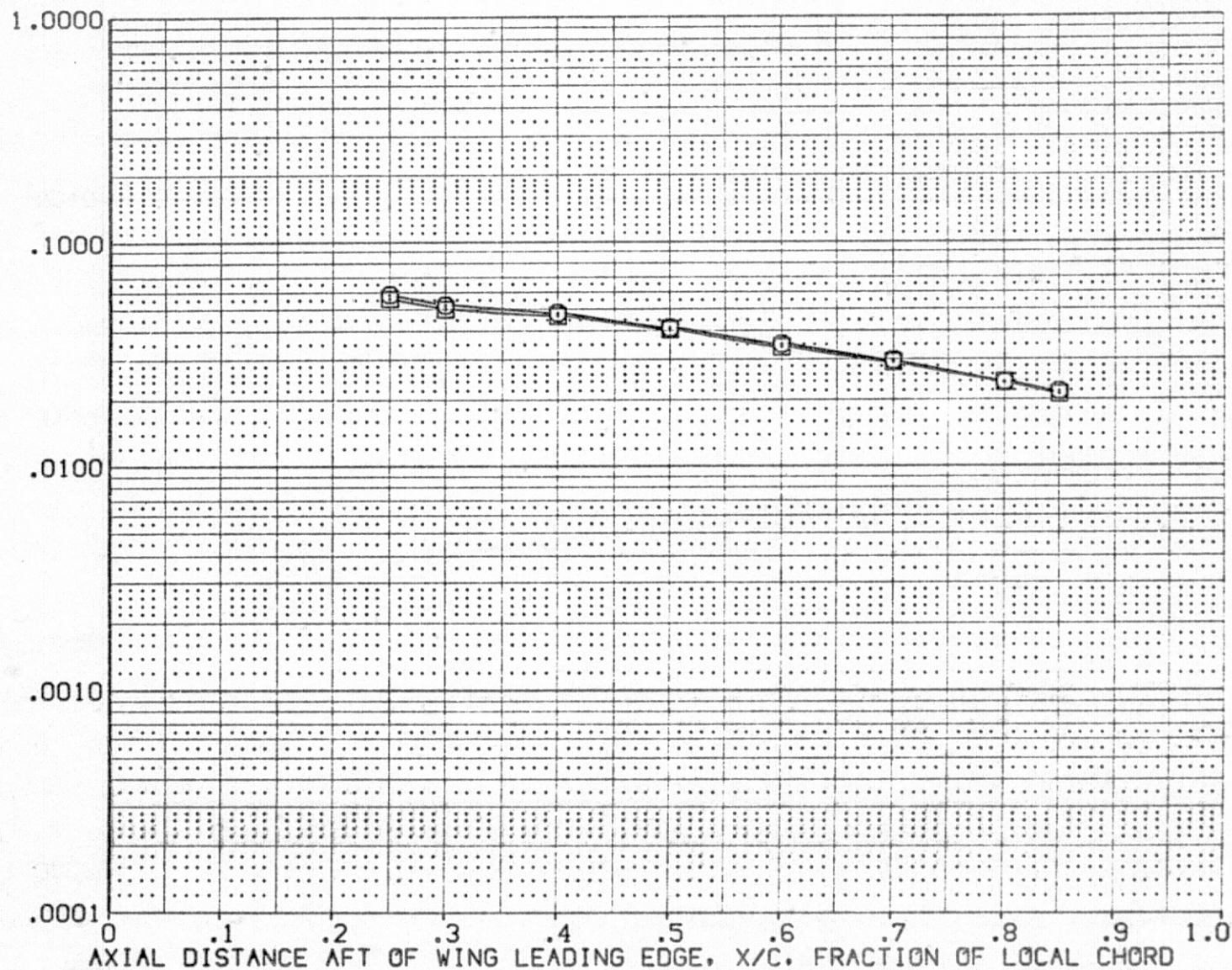
3.700  
.000ALPHA  
GRITNO.000  
25.000RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $H/H_{REF}$ 

FIG. 23 ORBITER ALONE

RN VARIATION WITH GRIT

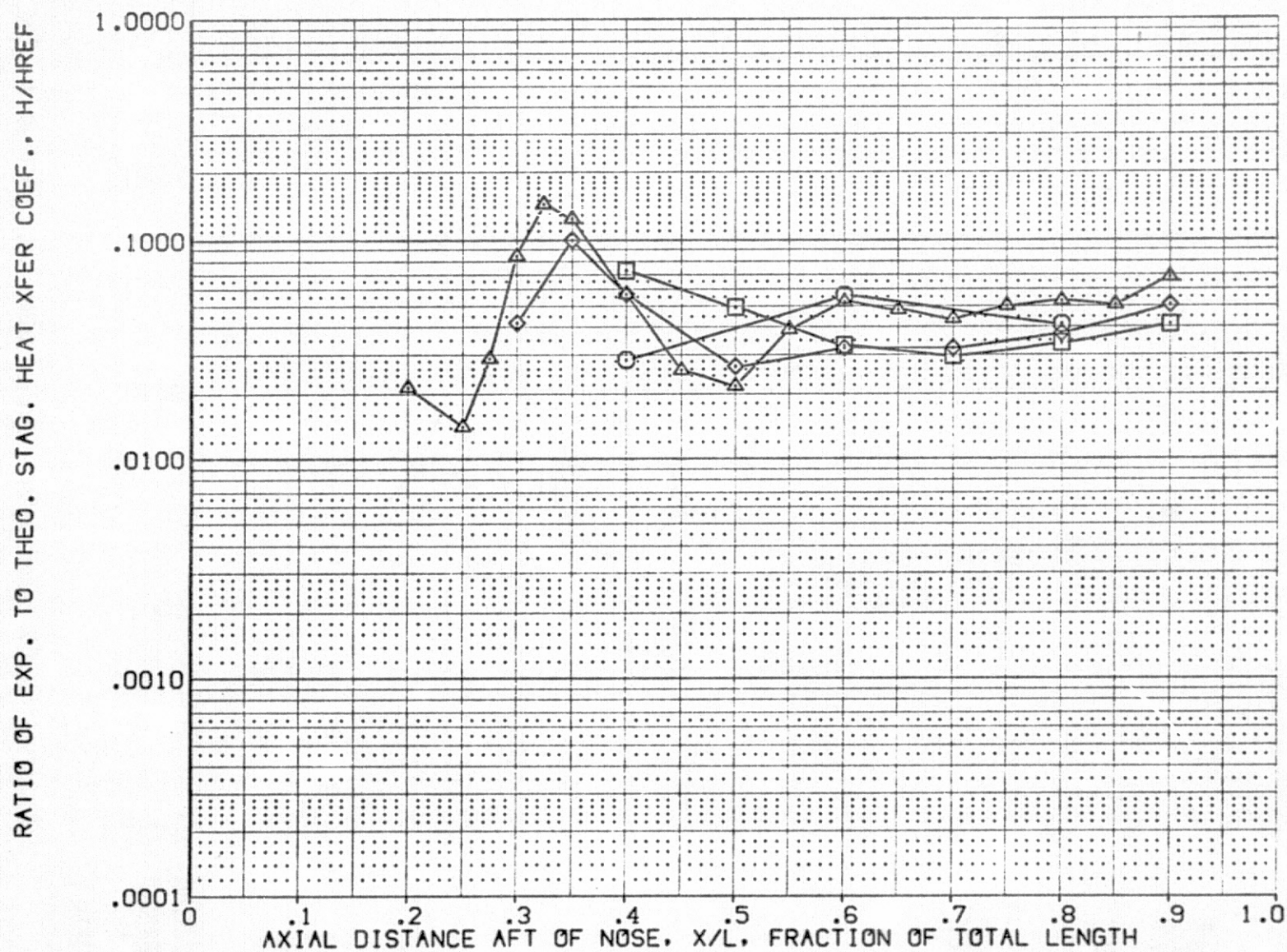


IH16 089B + T8 + S6 EXTERNAL TANK SURFACE

(CPQT01)

SYMBOL	PHI	HAW/HT	RN/L
○	.000	.900	1.930
□	45.000		
◇	67.500		
△	90.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

FIG. 24 INTEGRATED VEHICLE - ET SURFACE PHI VARIATION  $RN = 2$  MILLION / FT.

SYMBOL	PHI	HAW/HT	RN/L
○	112.500	.900	1.930
□	135.000		
◇	157.500		
△	180.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

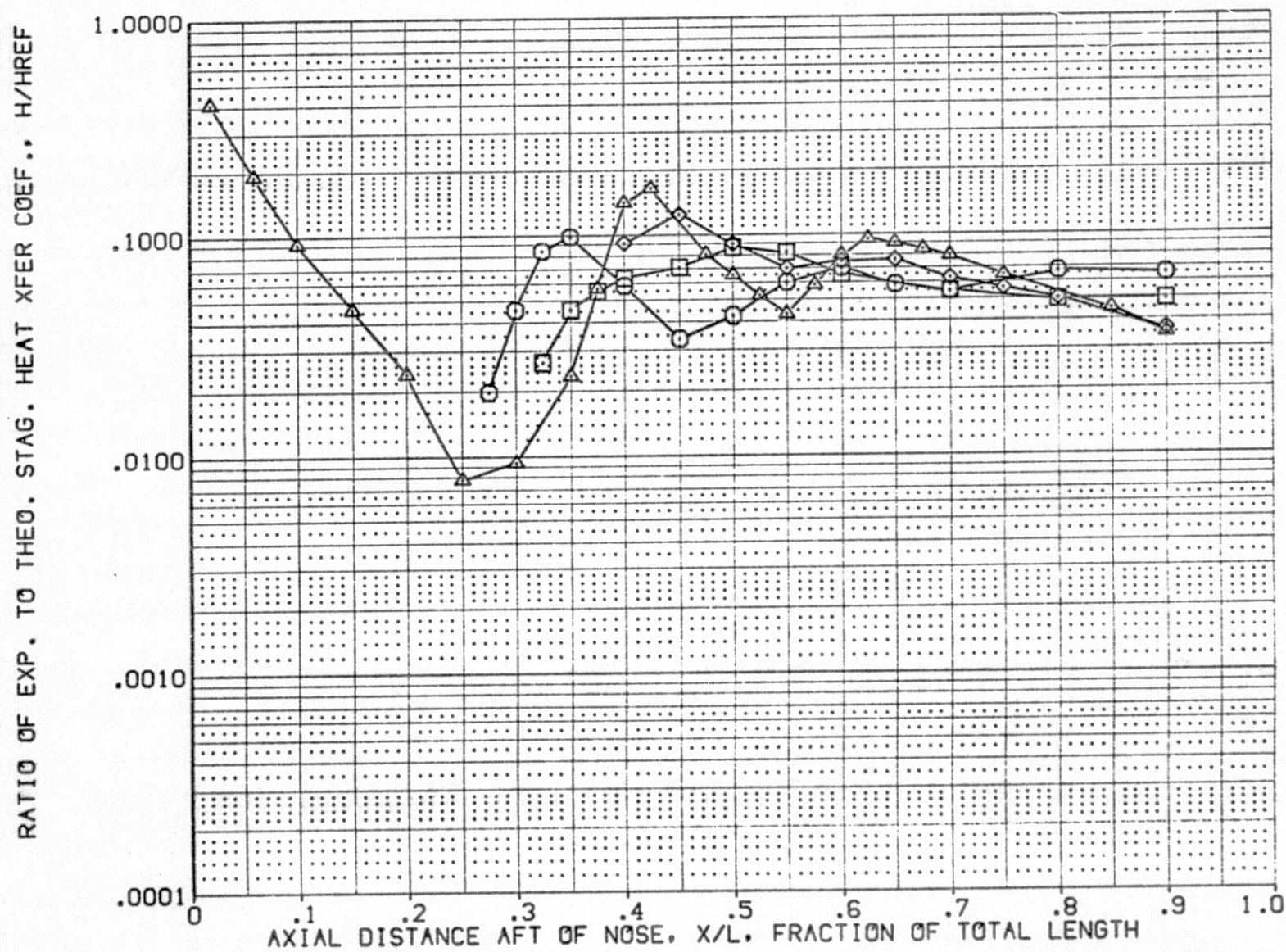
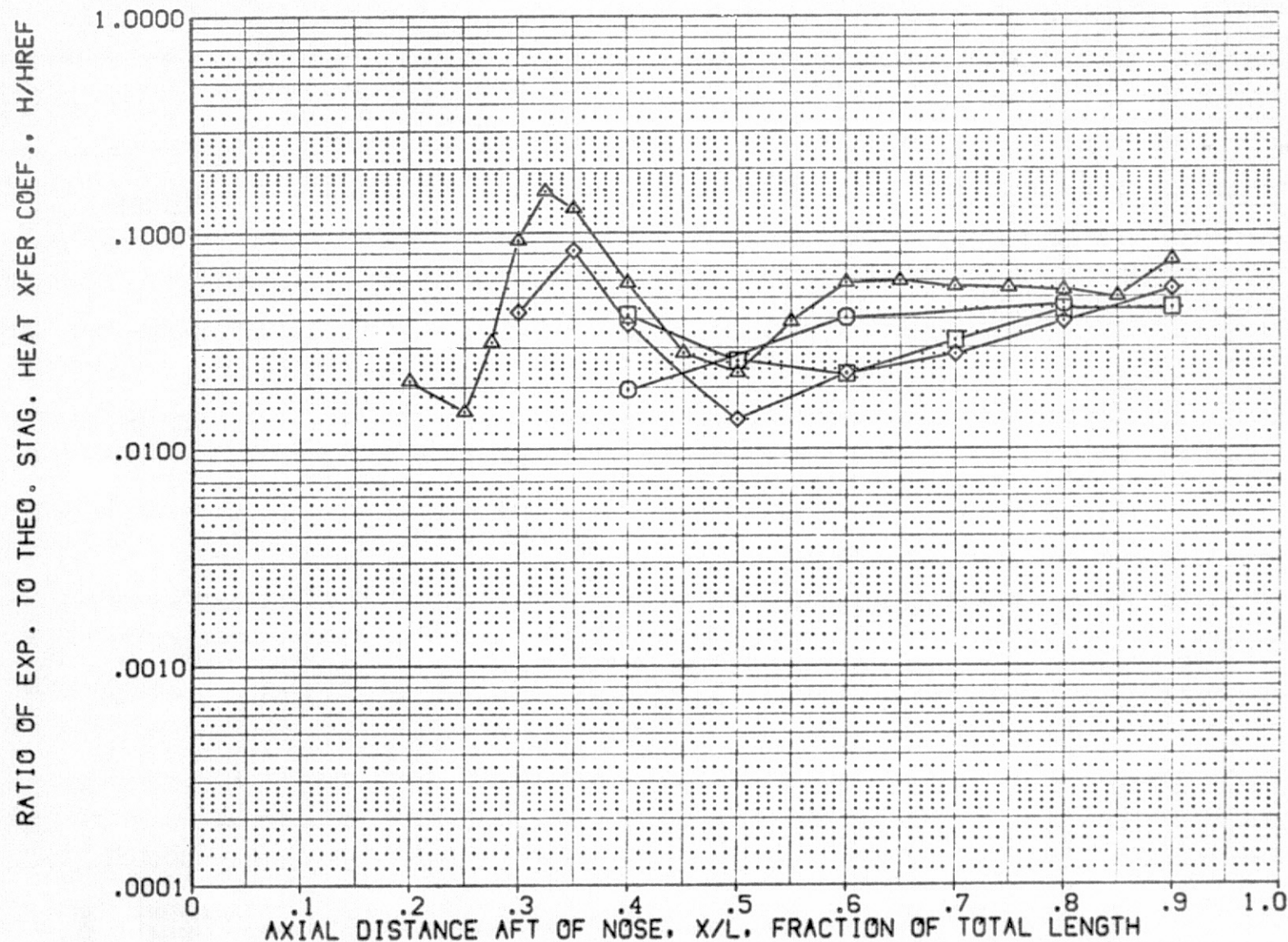


FIG. 24 INTEGRATED VEHICLE - ET SURFACE PHI VARIATION RN = 2 MILLION / FT.



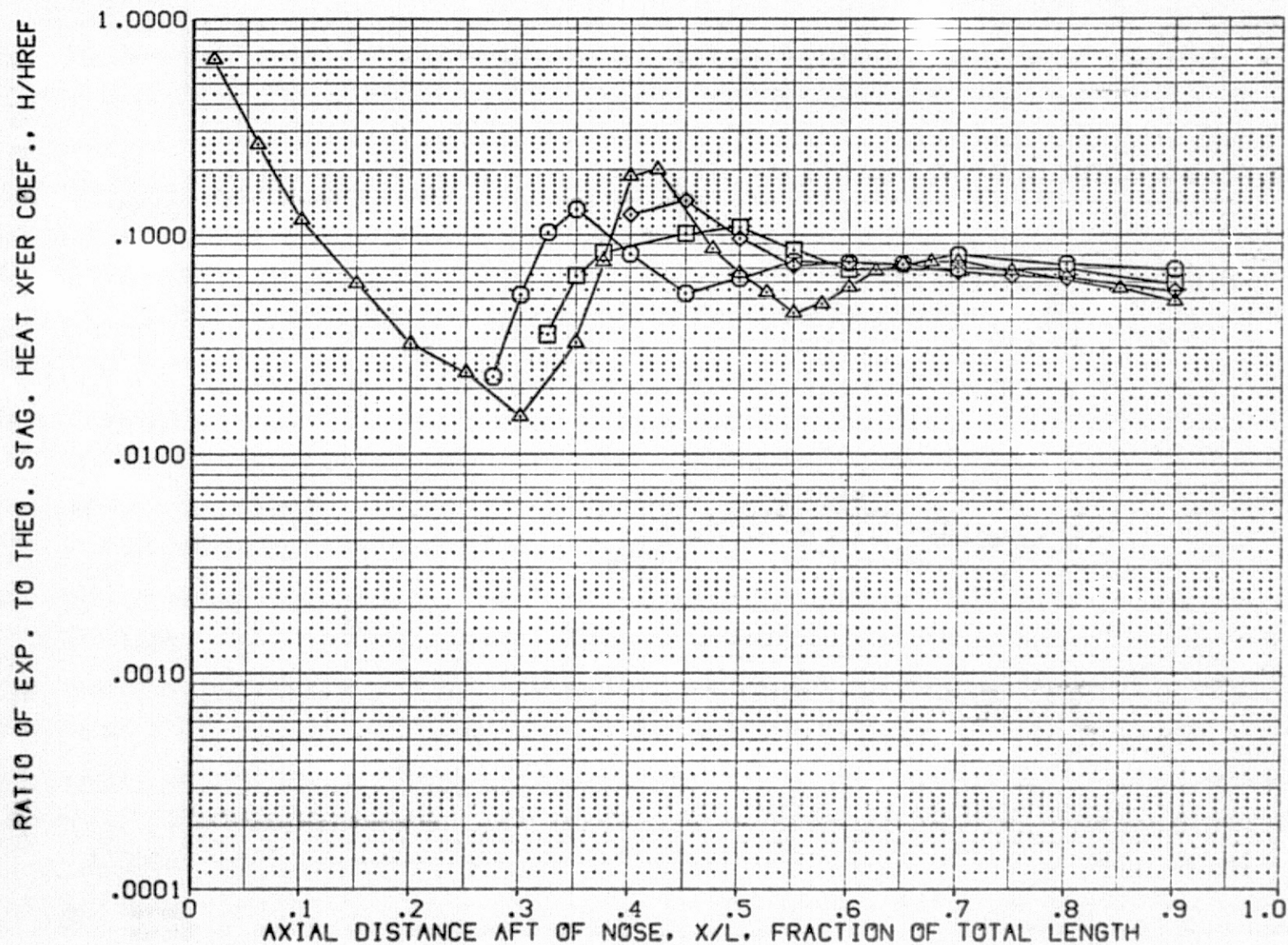
SYMBOL	PHI	HAV/HT	RN/L
○	.000	.900	1.990
□	45.000		
◇	67.500		
△	90.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	-5.000
BETA	.000	DELTA	.175

FIG. 24 INTEGRATED VEHICLE - ET SURFACE PHI VARIATION  $RN = 2$  MILLION / FT.

SYMBOL	PHI	HAW/HT	RN/L
○	112.500	.900	1.990
□	135.000		
◇	157.500		
△	180.000		

MACH	BETA	PARAMETRIC VALUES	ALPHA	DELTAH
3.700	.000	-5.000	.175	

FIG. 24 INTEGRATED VEHICLE - ET SURFACE PHI VARIATION  $RN = 2$  MILLION / FT.



IH16 089B + T8 + S6 EXTERNAL TANK SURFACE

(CPQT13)

SYMBOL	PHI	HAW/HT	RN/L
○	.000	.900	1.990
□	45.000		
◇	67.500		
△	90.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.069

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

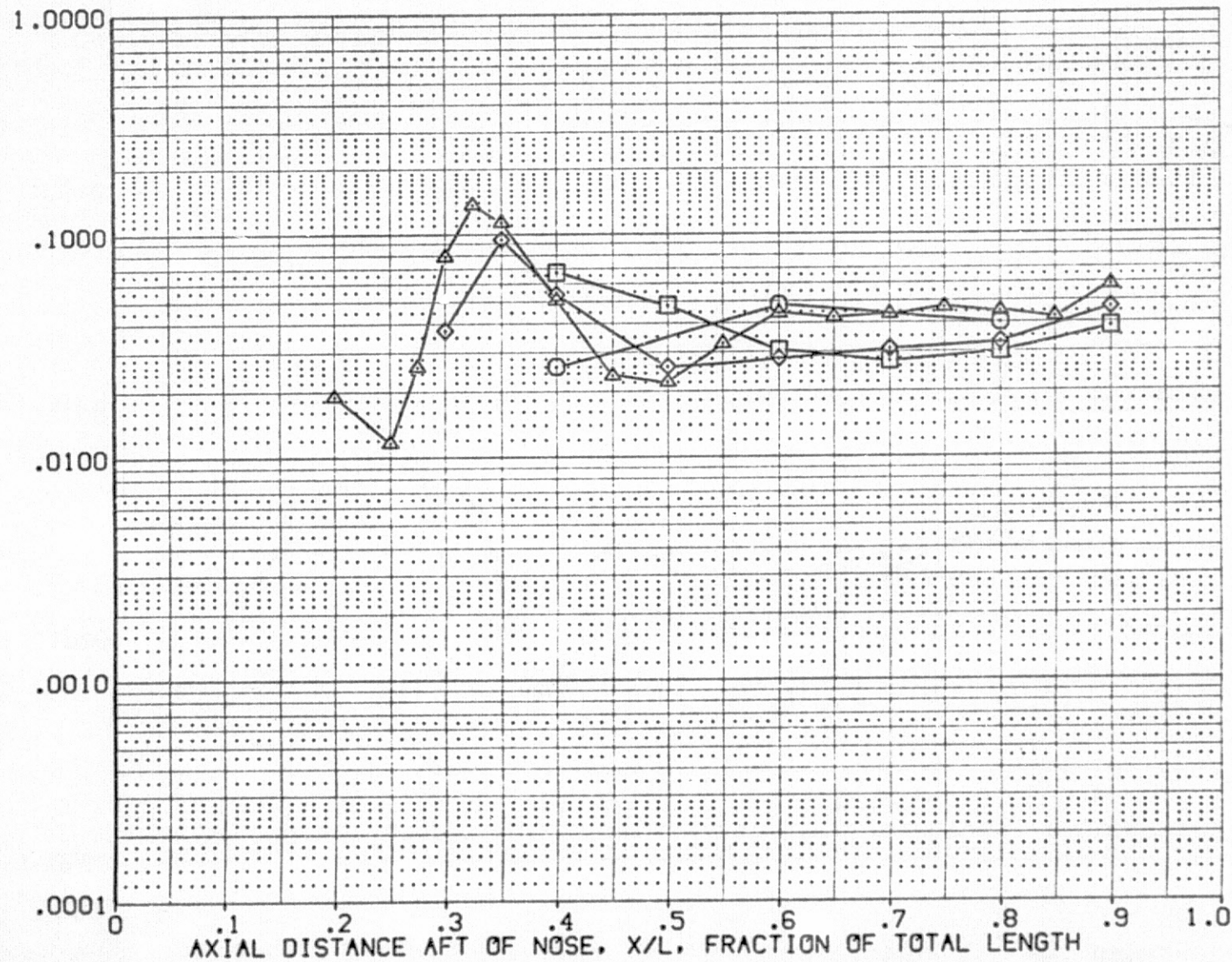
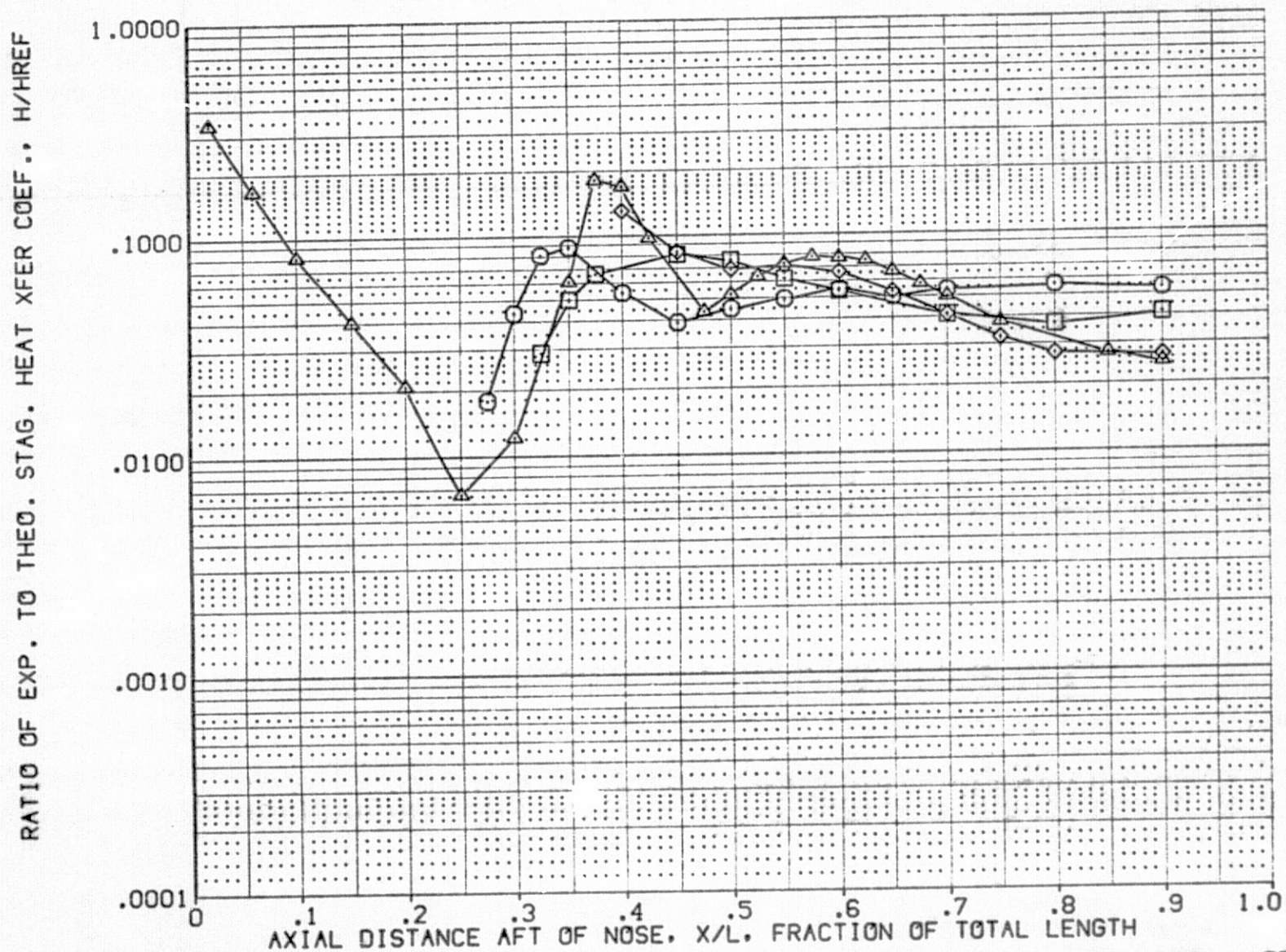


FIG. 24 INTEGRATED VEHICLE - ET SURFACE PHI VARIATION RN = 2 MILLION / FT.

SYMBOL	PHI	HAW/HT	RN/L
○	112.500	.900	1.990
□	135.000		
◇	157.500		
△	180.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTA	.069

FIG. 24 INTEGRATED VEHICLE - ET SURFACE PHI VARIATION  $RN = 2$  MILLION / FT.



IH16 089B + T8 + S6 EXTERNAL TANK SURFACE (CPQT14)

SYMBOL	PHI	HAW/HT	RN/L
○	.000	.900	2.000
□	45.000		
◇	67.500		
△	90.000		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
ALPHA	-5.000
DELTAH	.069

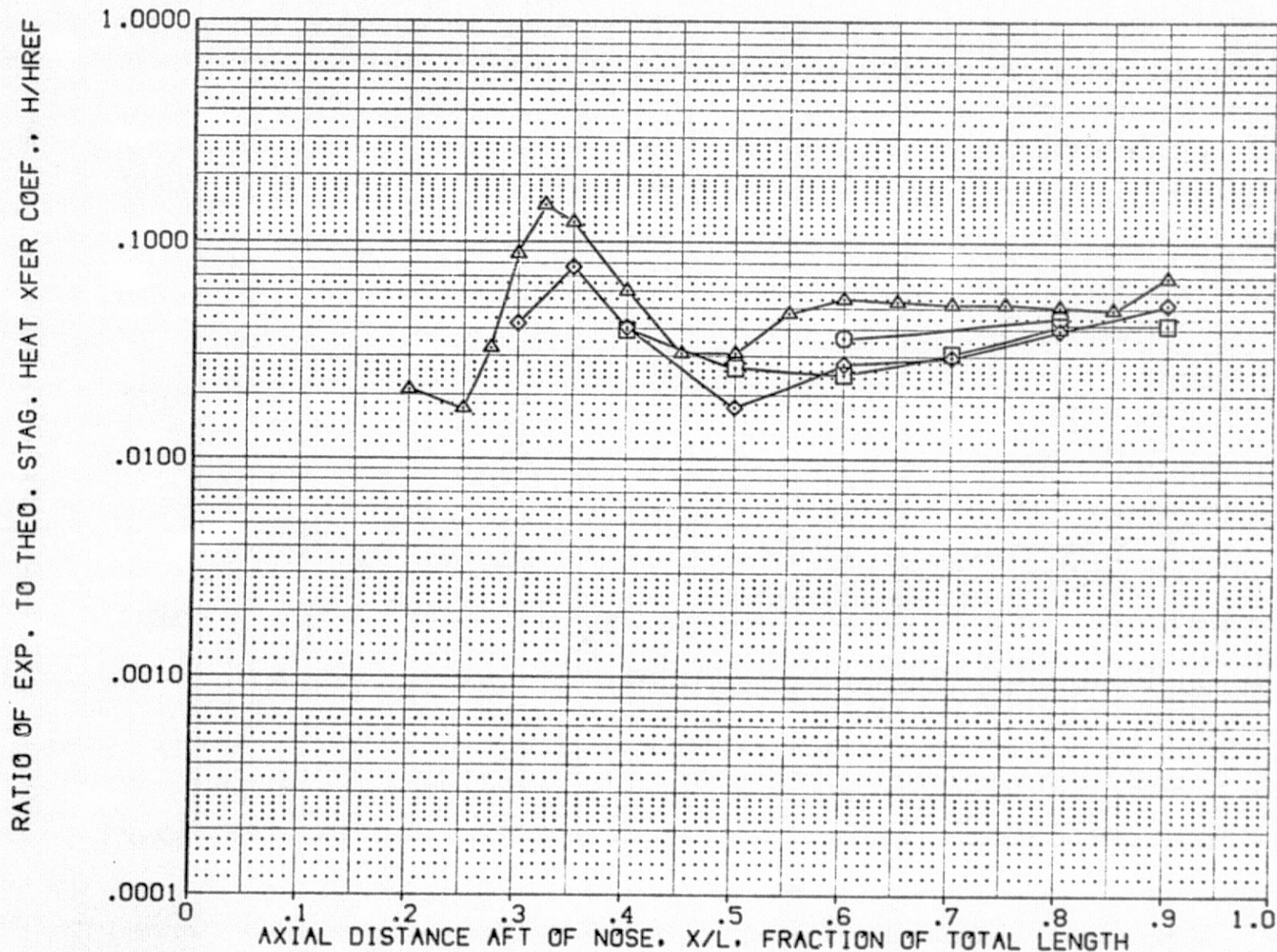


FIG. 24 INTEGRATED VEHICLE - ET SURFACE PHI VARIATION RN = 2 MILLION / FT.

SYMBOL	PHI	HAV/HT	RN/L
○	112.500	.900	2.000
□	135.000		
◇	157.500		
△	180.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	-5.000
BETA	.000	DELTAH	.069

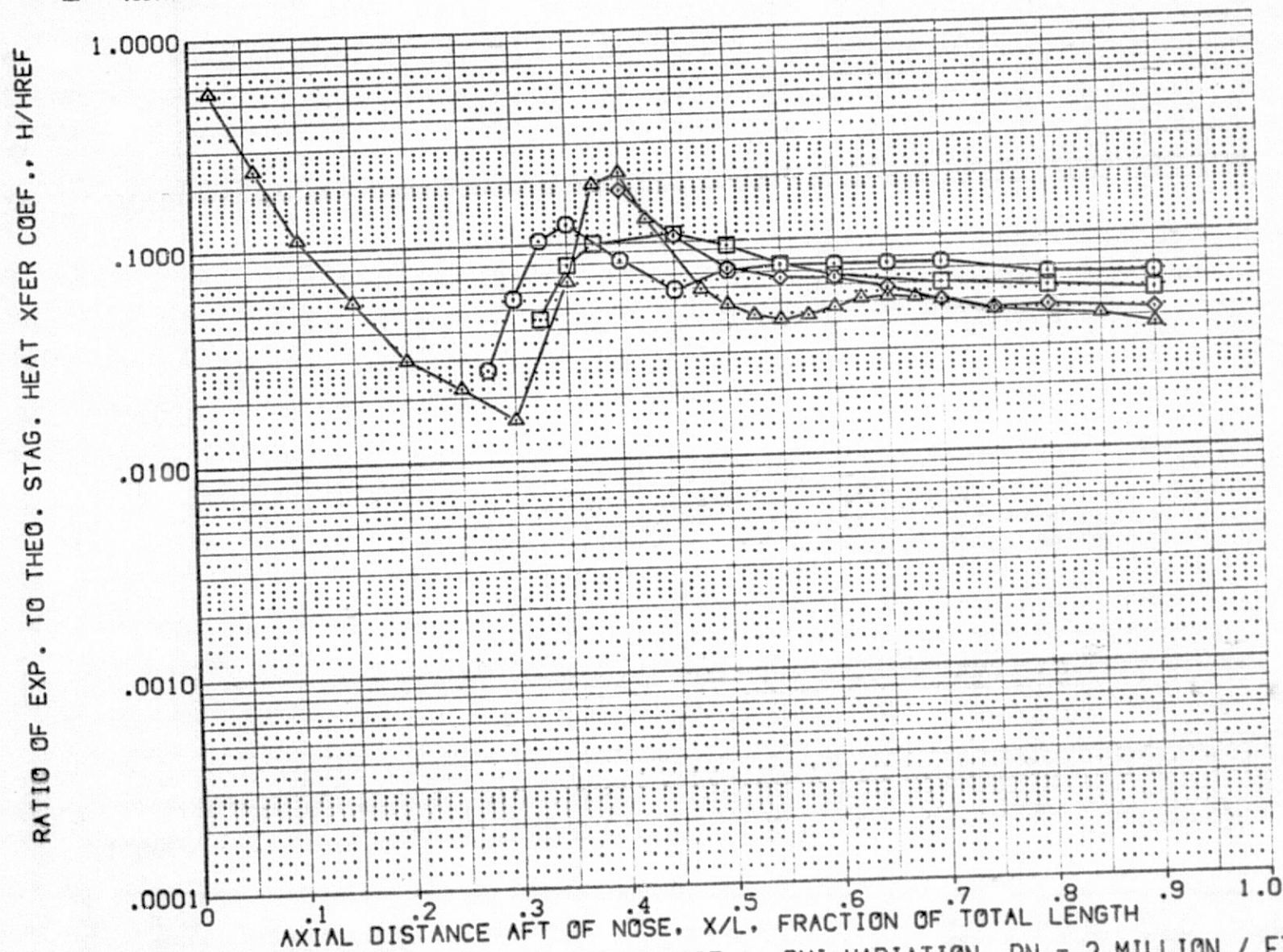


FIG. 24 INTEGRATED VEHICLE - ET SURFACE PHI VARIATION  $RN = 2$  MILLION / FT.

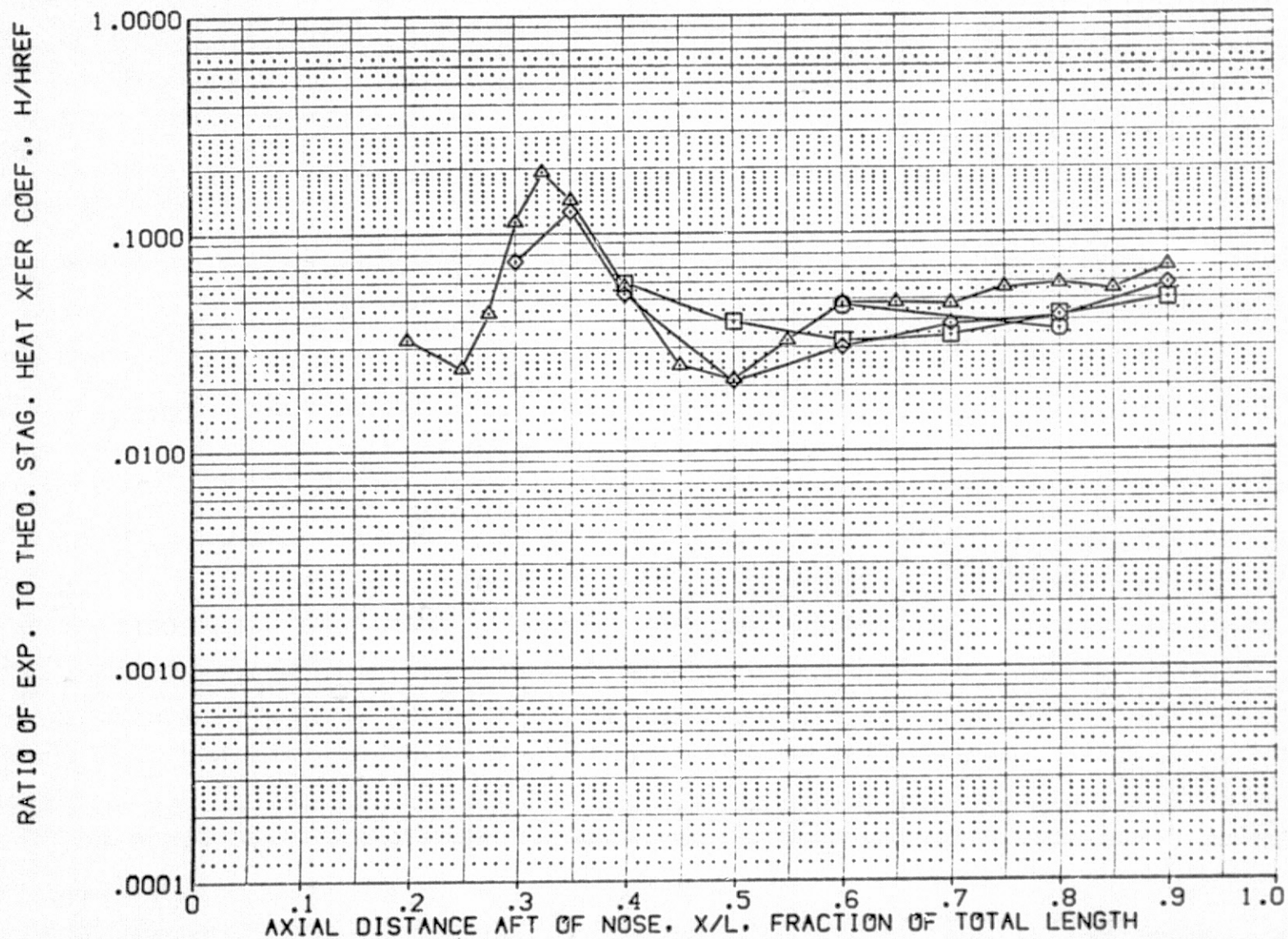


## IH16 089B+T8+S6+GRIT EXTERNAL TANK SURFACE

(CPQT15)

SYMBOL	PHI	HAW/HT	RN/L
○	.000	.900	1.890
□	45.000		
◇	67.500		
△	90.000		

PARAMETRIC VALUES		
MACH	3.700	ALPHA .000
BETA	.000	DELTAH .175
GRITNO	25.000	

FIG. 24 INTEGRATED VEHICLE - ET SURFACE PHI VARIATION  $RN = 2 \text{ MILLION / FT.}$

SYMBOL	PHI	HAW/HT	RN/L
○	112.500	.900	1.890
□	135.000		
◇	157.500		
△	180.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175
GRITNO	25.000		

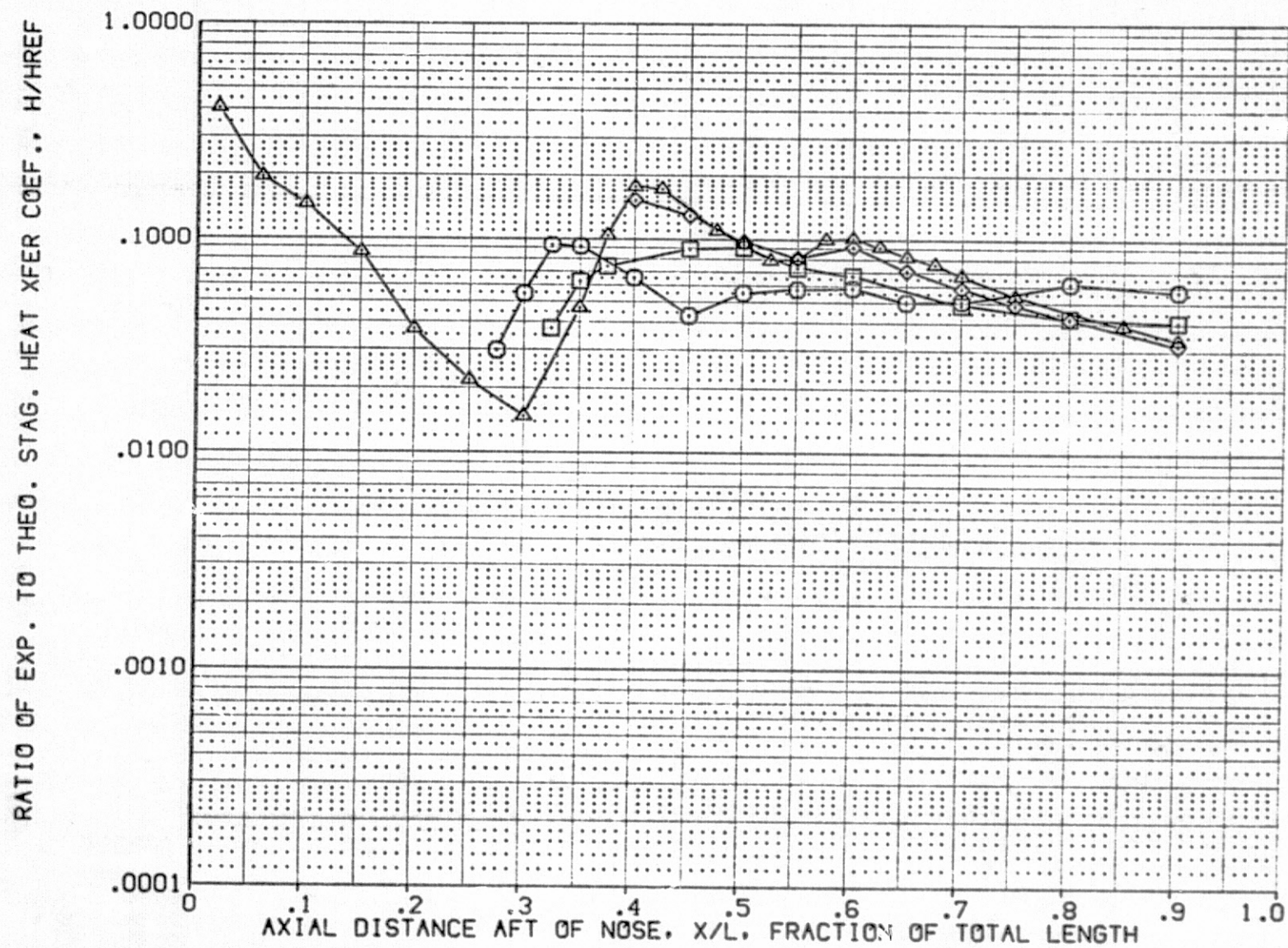


FIG. 24 INTEGRATED VEHICLE - ET SURFACE PHI VARIATION RN = 2 MILLION / FT.



IH16 089B + T8 + S6 EXTERNAL TANK SURFACE

(CPQT01)

SYMBOL	PHI	HAW/HT	RN/L
○	.000	.900	4.570
□	45.000		
◇	67.500		
△	90.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

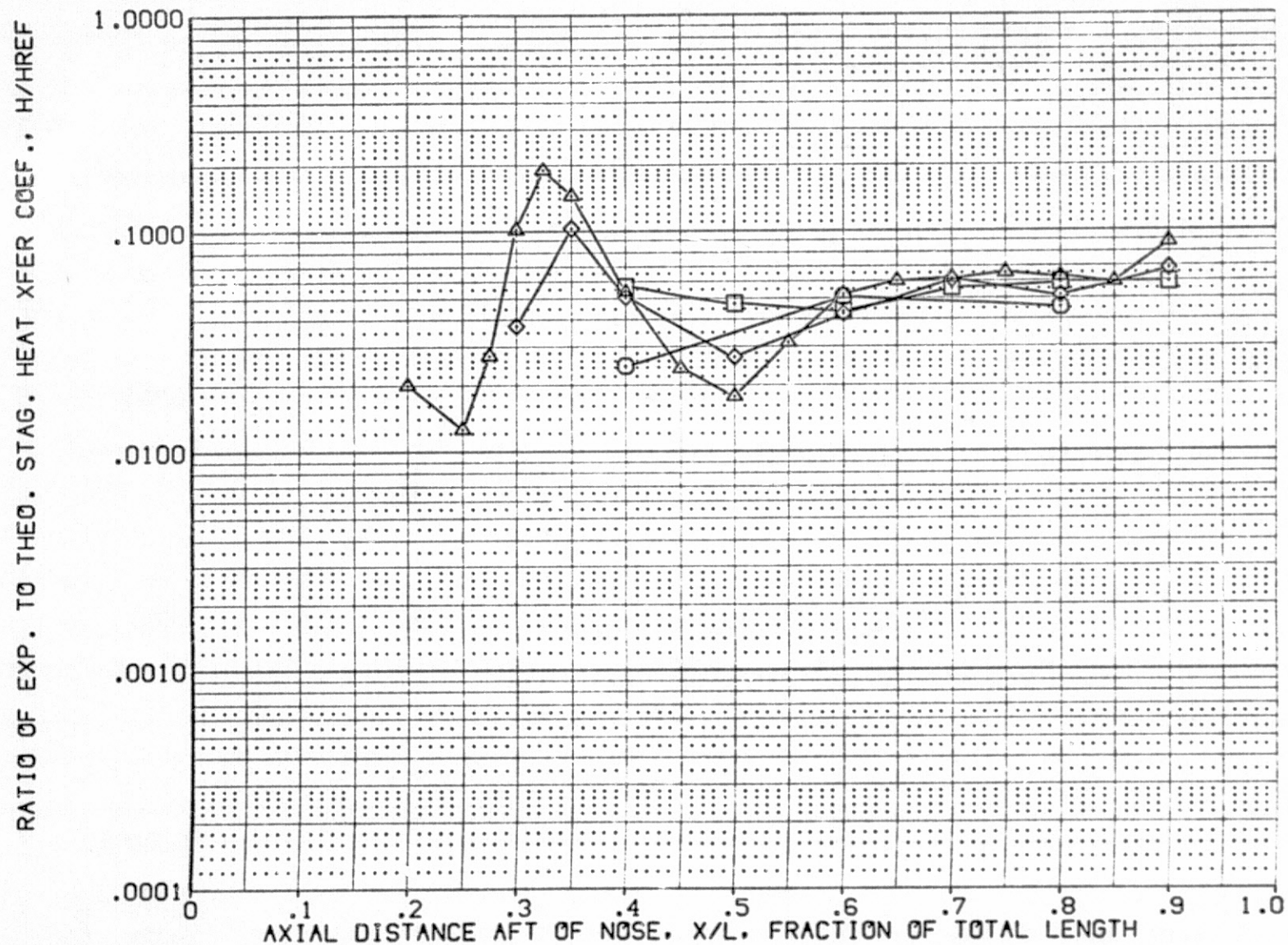
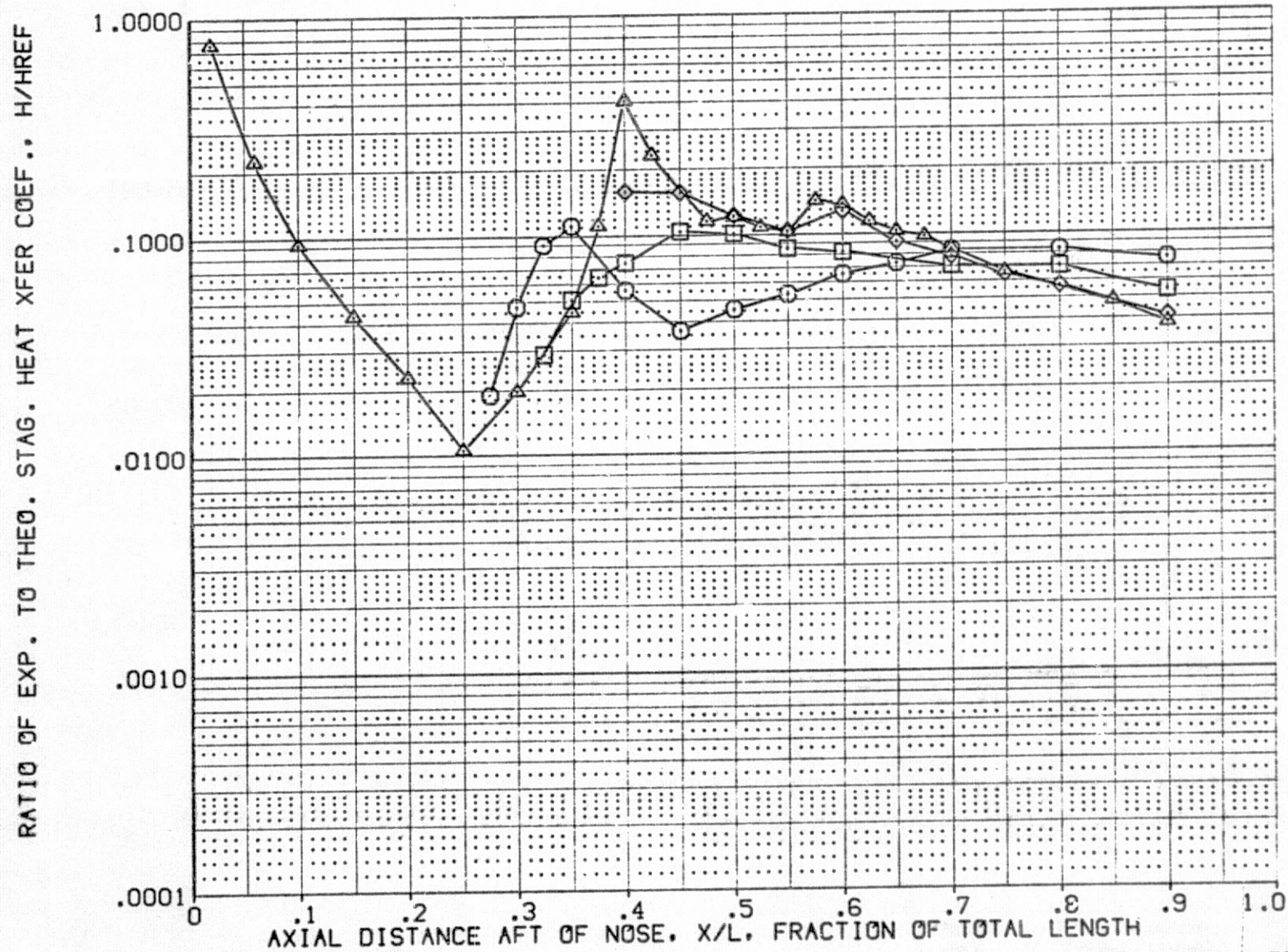


FIG. 25 INTEGRATED VEHICLE - ET SURFACE PHI VARIATION RN = 5 MILLION / FT.

SYMBOL	PHI	HAW/HT	RN/L
○	112.500	.900	4.570
□	135.000		
◇	157.500		
△	180.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTA	.175

FIG. 25 INTEGRATED VEHICLE - ET SURFACE PHI VARIATION  $RN = 5 \text{ MILLION / FT.}$



IH16 089B + T8 + S6 EXTERNAL TANK SURFACE

(CPQT02)

SYMBOL	PHI	HAW/HT	RN/L
○	.000	.900	4.560
□	45.000		
◇	67.500		
△	90.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	-5.000
BETA	.000	DELTA	.175

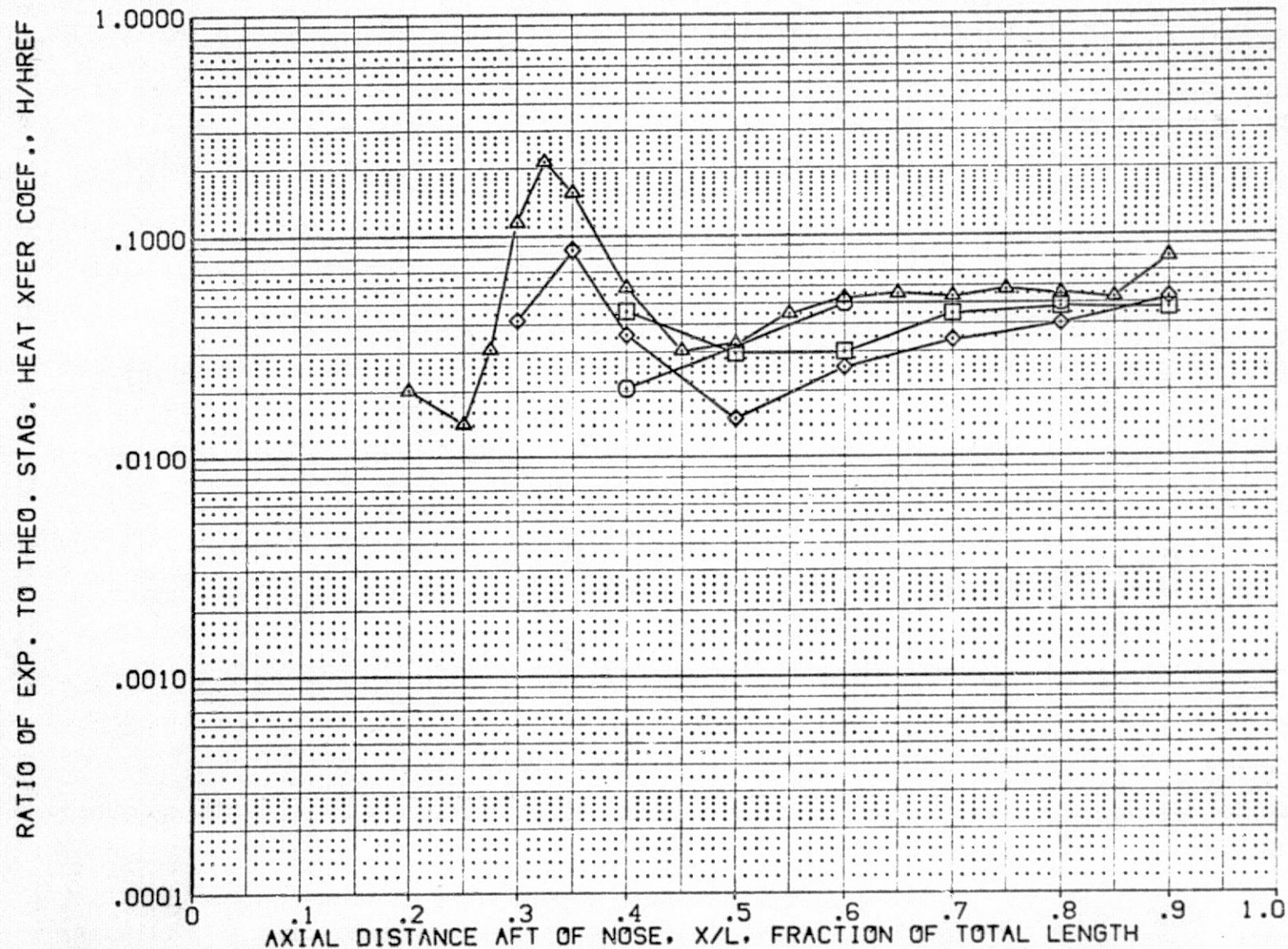


FIG. 25 INTEGRATED VEHICLE - ET SURFACE PHI VARIATION RN = 5 MILLION / FT.

SYMBOL	PHI	HAV/HT	RN/L
○	112.500	.900	4.560
□	135.000		
◇	157.500		
△	180.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	-5.000
BETA	.000	DELTAH	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

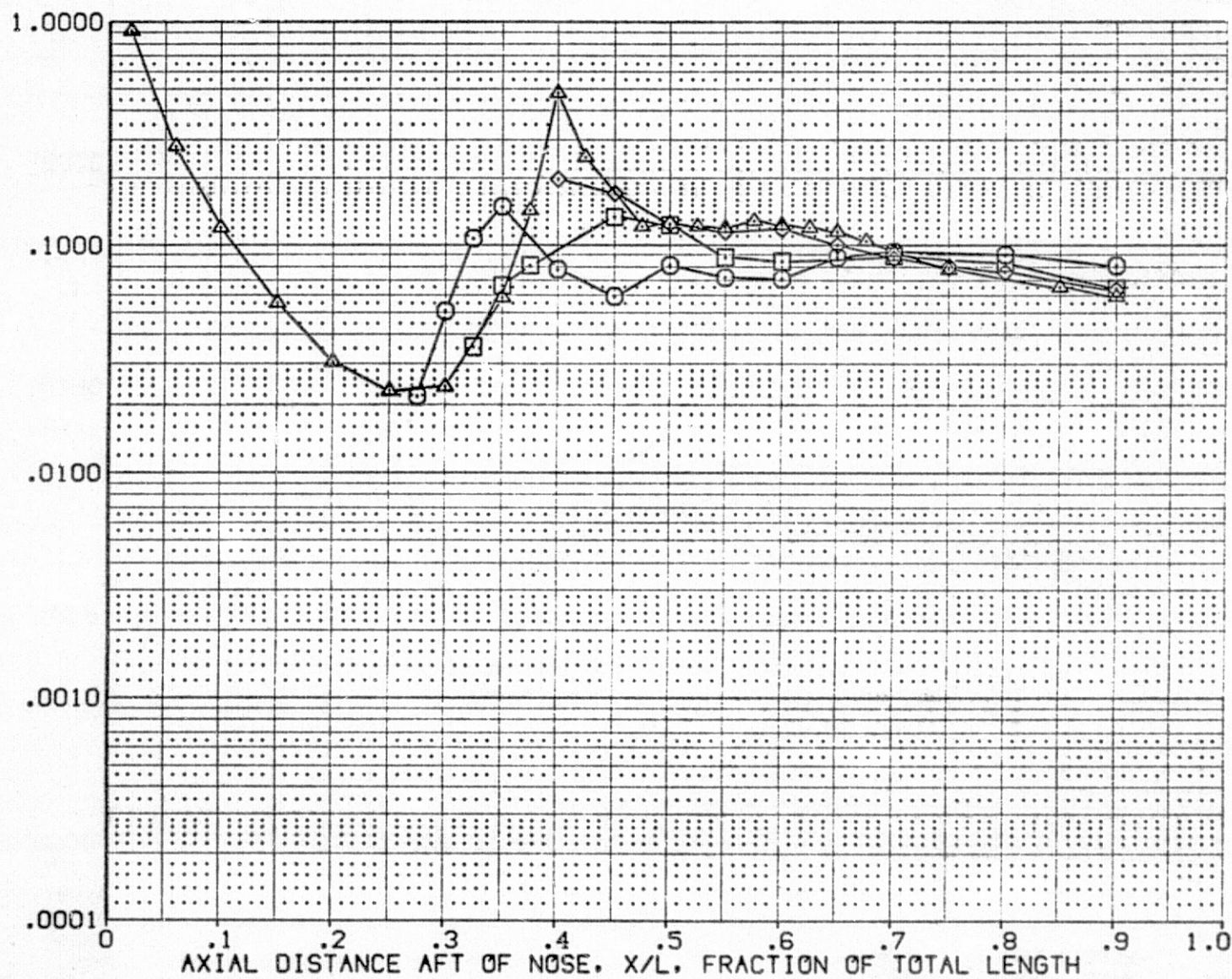


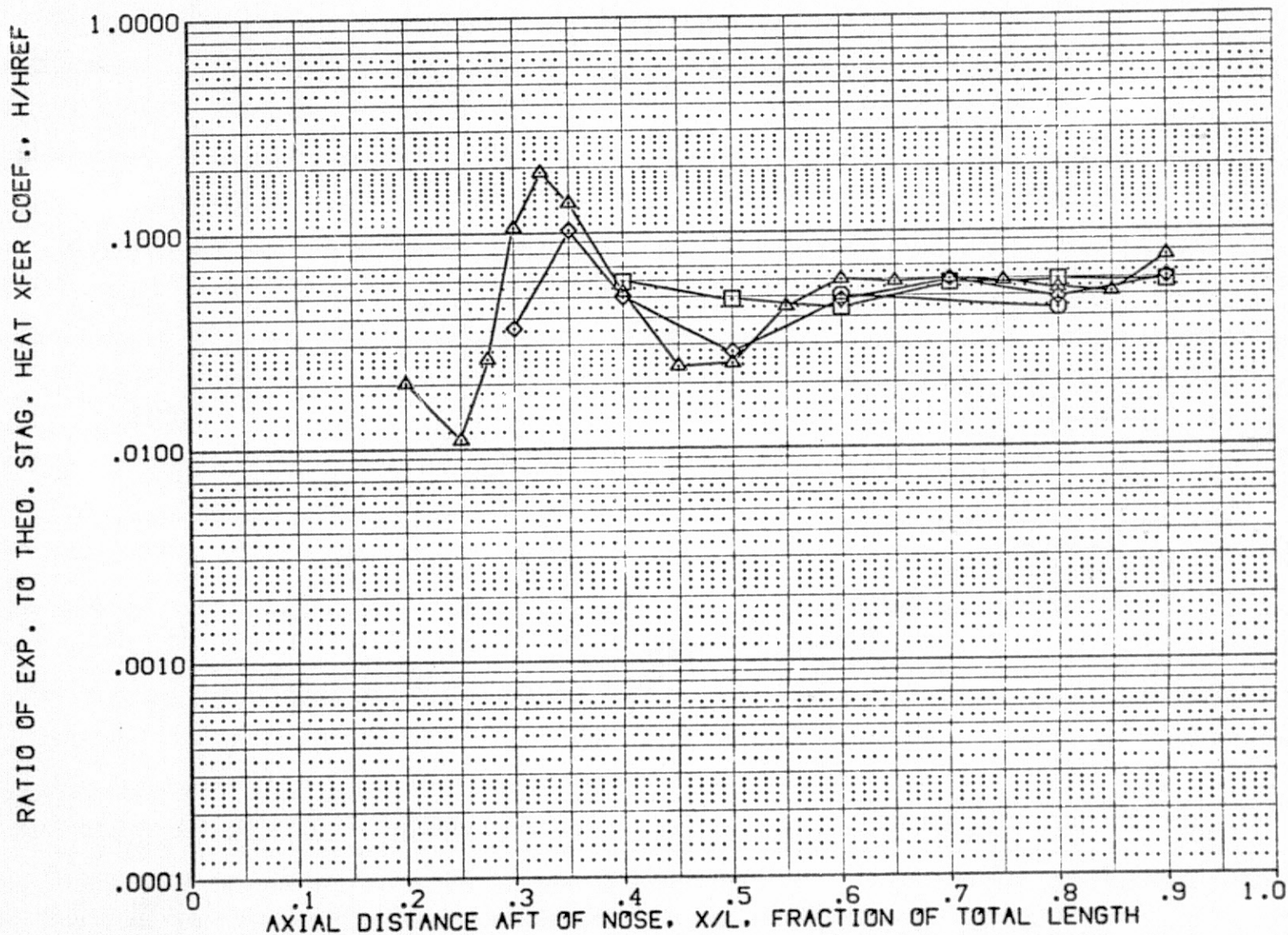
FIG. 25 INTEGRATED VEHICLE - ET SURFACE PHI VARIATION RN = 5 MILLION / FT.



IH16 089B + T8 + S6 EXTERNAL TANK SURFACE

(CPQT13)

SYMBOL	PHI	HAW/HT	RN/L	MACH	BETA	PARAMETRIC VALUES	ALPHA	DELTAH
○	.000	.900	4.550	3.700			.000	
□	45.000			.000				.069
◇	67.500							
△	90.000							

FIG. 25 INTEGRATED VEHICLE - ET SURFACE PHI VARIATION  $RN = 5 \text{ MILLION / FT.}$

SYMBOL	PHI	HAW/HT	RN/L	MACH	BETA	PARAMETRIC VALUES	ALPHA	DELTAH	
○	112.500	.900	4.550			3.700			.000
□	135.000					.000			.069
◇	157.500								
△	180.000								

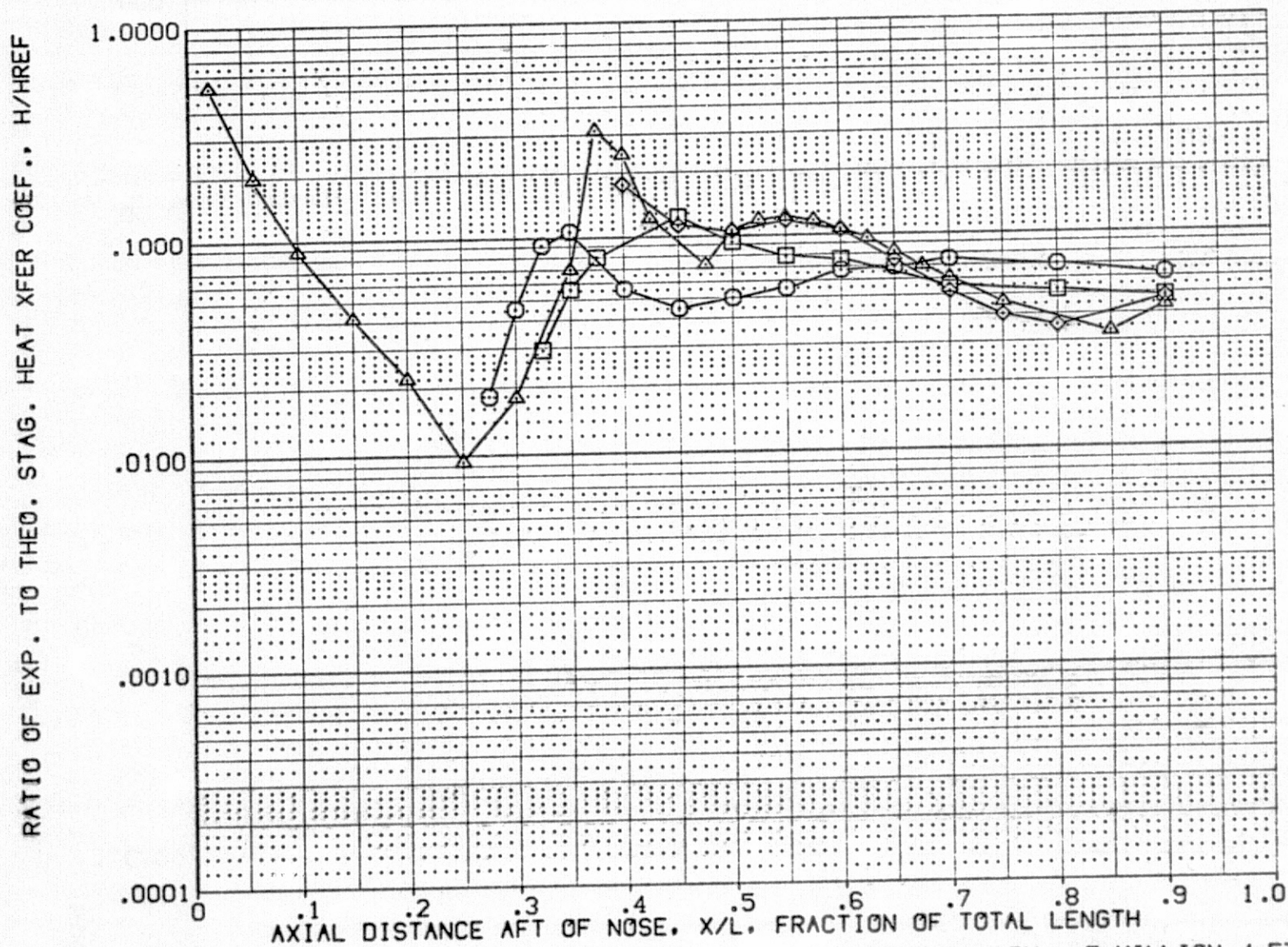
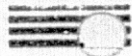


FIG. 25 INTEGRATED VEHICLE - ET SURFACE PHI VARIATION  $RN = 5$  MILLION / FT.





IH16 089B + T8 + S6 EXTERNAL TANK SURFACE

(CPQT14)

SYMBOL	PHI	HAW/HT	RN/L
○	.000	.900	4.470
□	45.000		
◇	67.500		
△	90.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	-5.000
BETA	.000	DELTA	.069

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

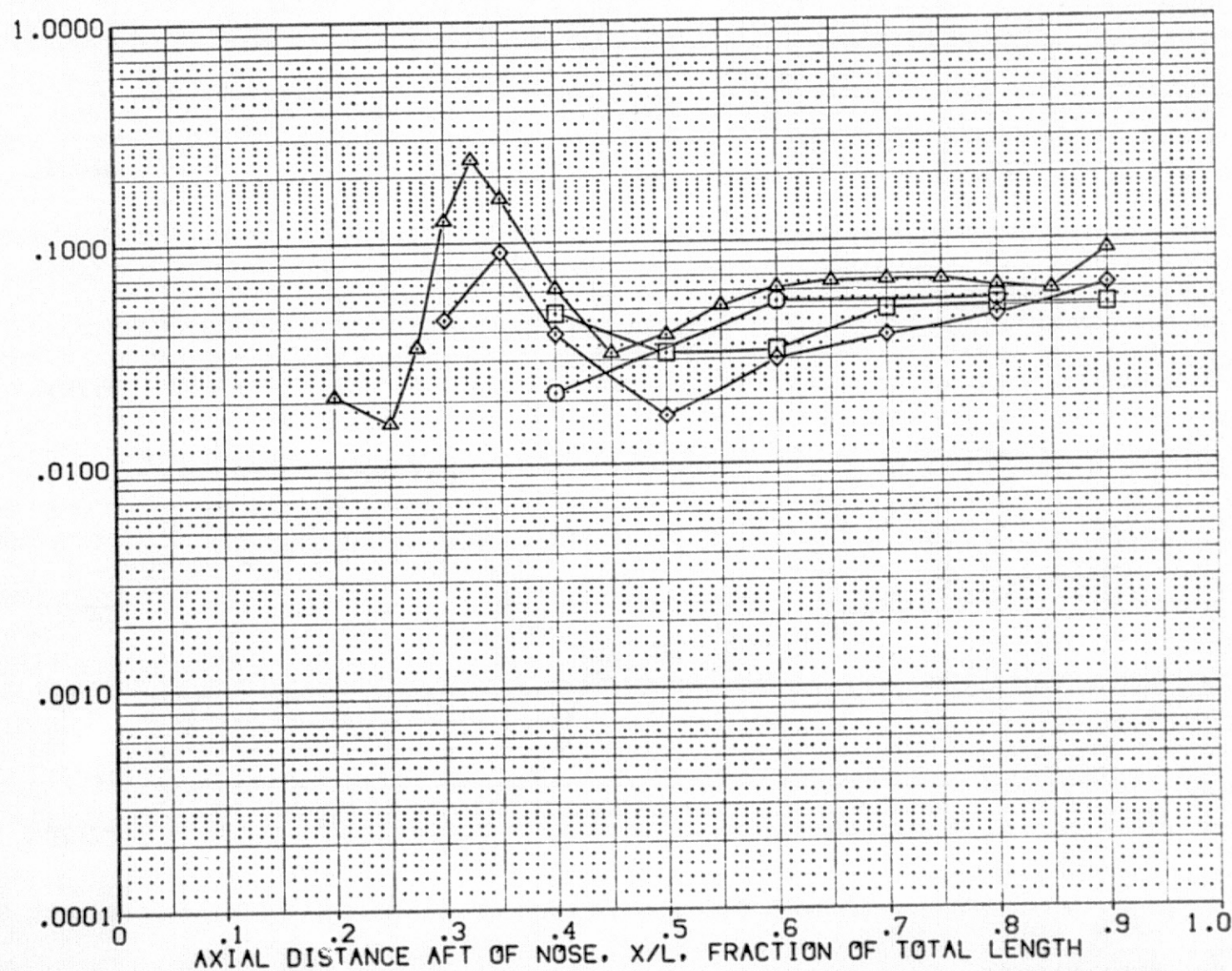
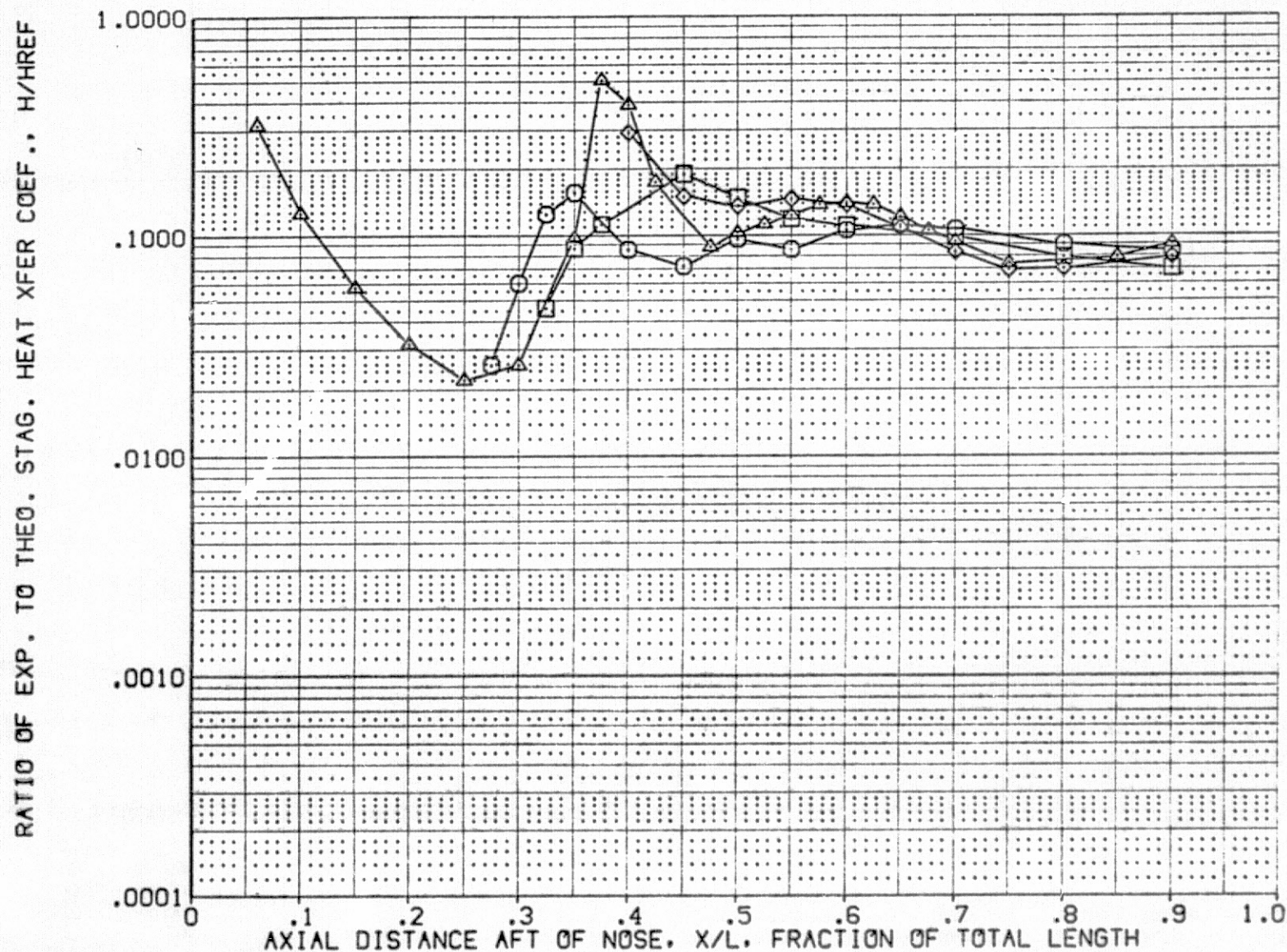


FIG. 25 INTEGRATED VEHICLE - ET SURFACE PHI VARIATION RN = 5 MILLION / FT.

SYMBOL	PHI	HAW/HT	RN/L
○	112.500	.900	4.470
□	135.000		
◇	157.500		
△	180.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	-5.000
BETA	.000	DELTA	.069

FIG. 25 INTEGRATED VEHICLE - ET SURFACE PHI VARIATION  $RN = 5$  MILLION / FT.

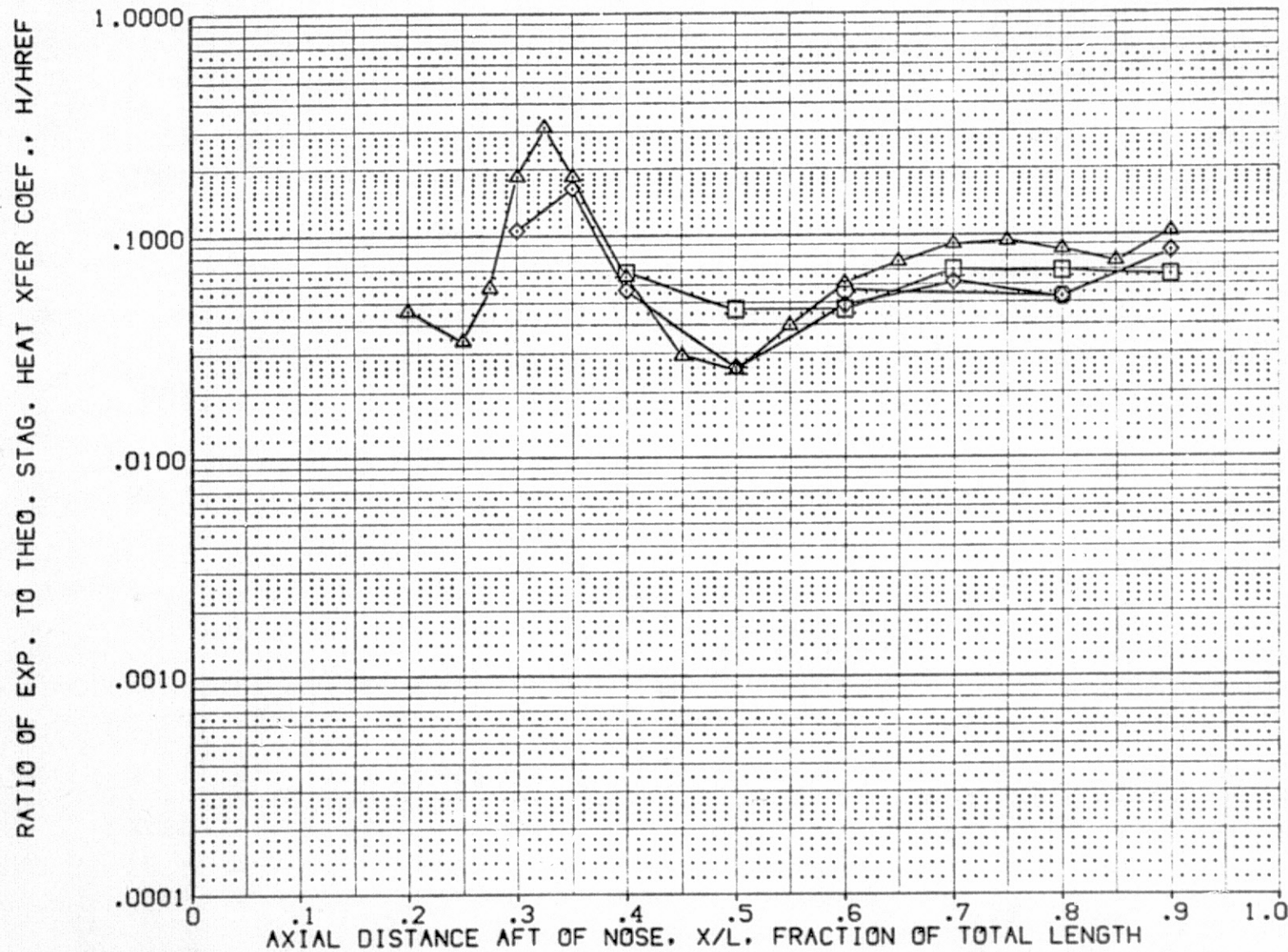


## IH16 089B+T8+S6+GRIT EXTERNAL TANK SURFACE

(CPQT15)

SYMBOL	PHI	HAW/HT	RN/L
○	.000	.900	4.620
□	45.000		
◇	67.500		
△	90.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175
GRITNO	25.000		

FIG. 25 INTEGRATED VEHICLE - ET SURFACE PHI VARIATION  $RN = 5 \text{ MILLION / FT.}$

SYMBOL	PHI	HAW/HT	RN/L
○	112.500	.900	4.620
□	135.000		
◇	157.500		
△	180.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175
GRITNO	25.000		

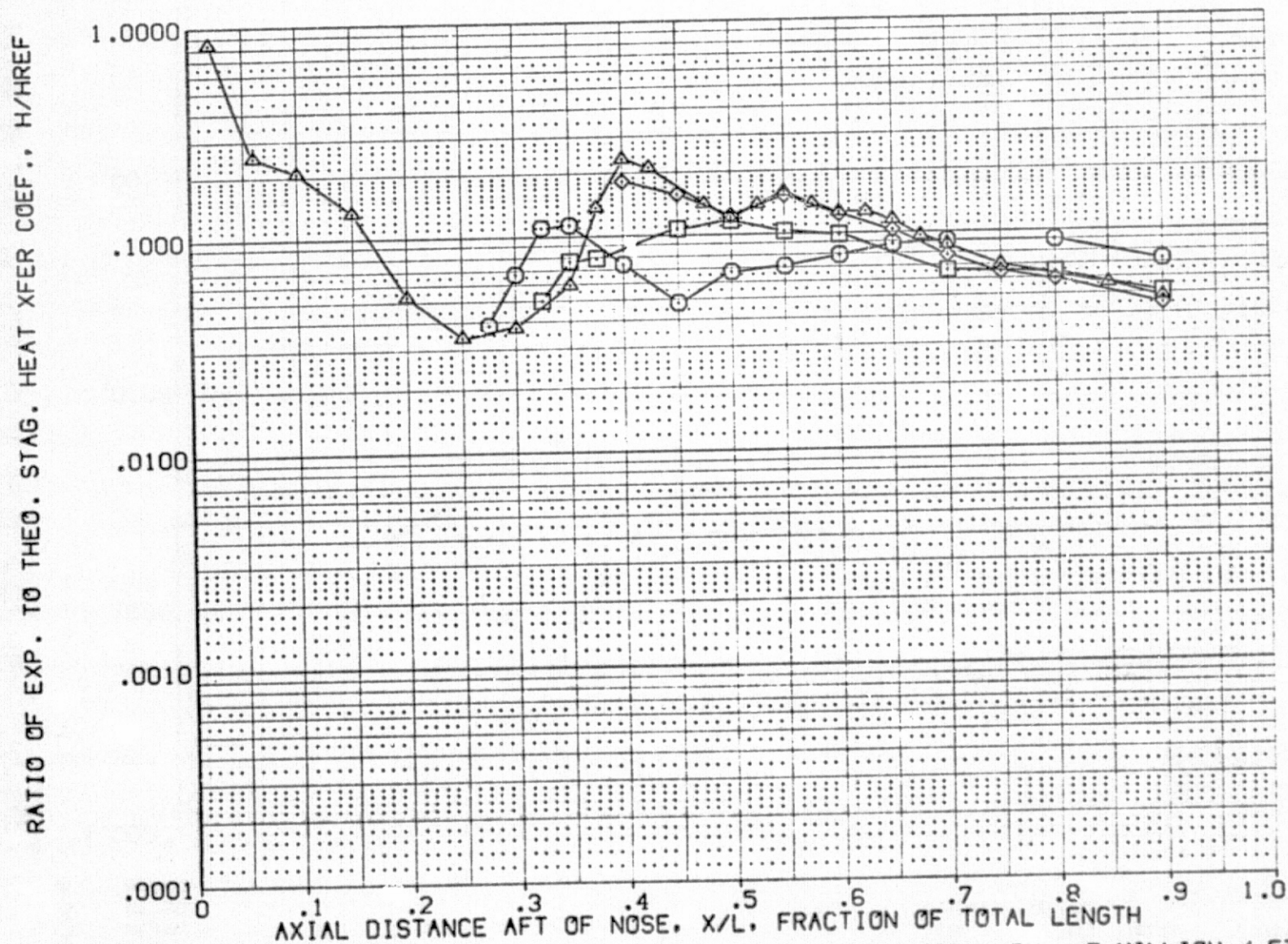


FIG. 25 INTEGRATED VEHICLE - ET SURFACE PHI VARIATION  $RN = 5 \text{ MILLION / FT.}$



IH16

T8

EXTERNAL TANK SURFACE

(CPQT03)

SYMBOL	PHI	HAW/HT	RN/L
○	.000	.900	1.940
□	45.000		
◇	67.500		
△	90.000		

MACH	BETA
3.700	.000

PARAMETRIC VALUES	
ALPHA	.000

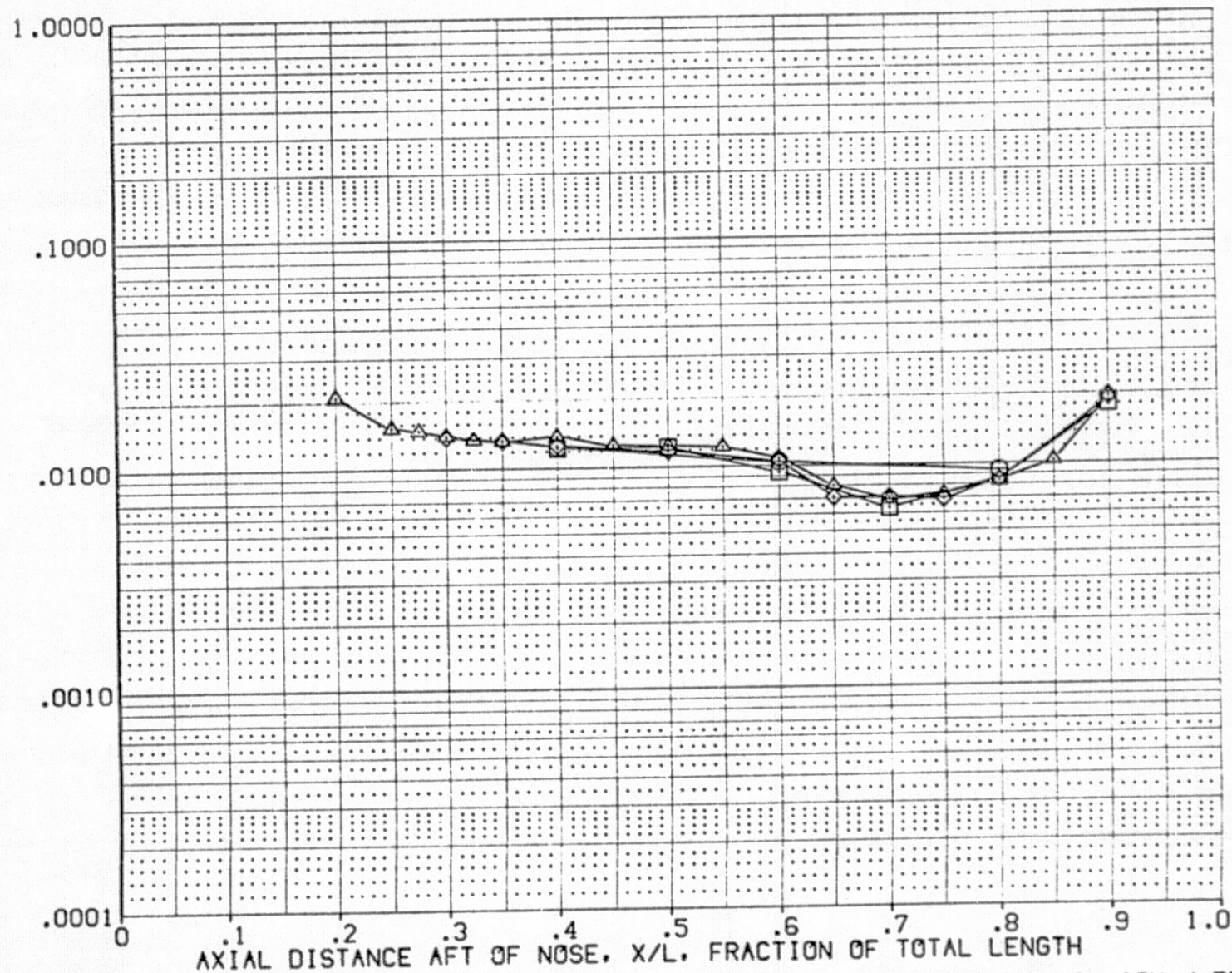
RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $H/H_{REF}$ 

FIG. 26 ET ALONE

PHI VARIATION RN = 2 MILLION / FT.

IH16 T8

EXTERNAL TANK SURFACE

(CPQT03)

SYMBOL	PHI	HAW/HT	RN/L
○	112.500	.900	1.940
□	135.000		
◇	157.500		
△	180.000		

MACH  
BETA

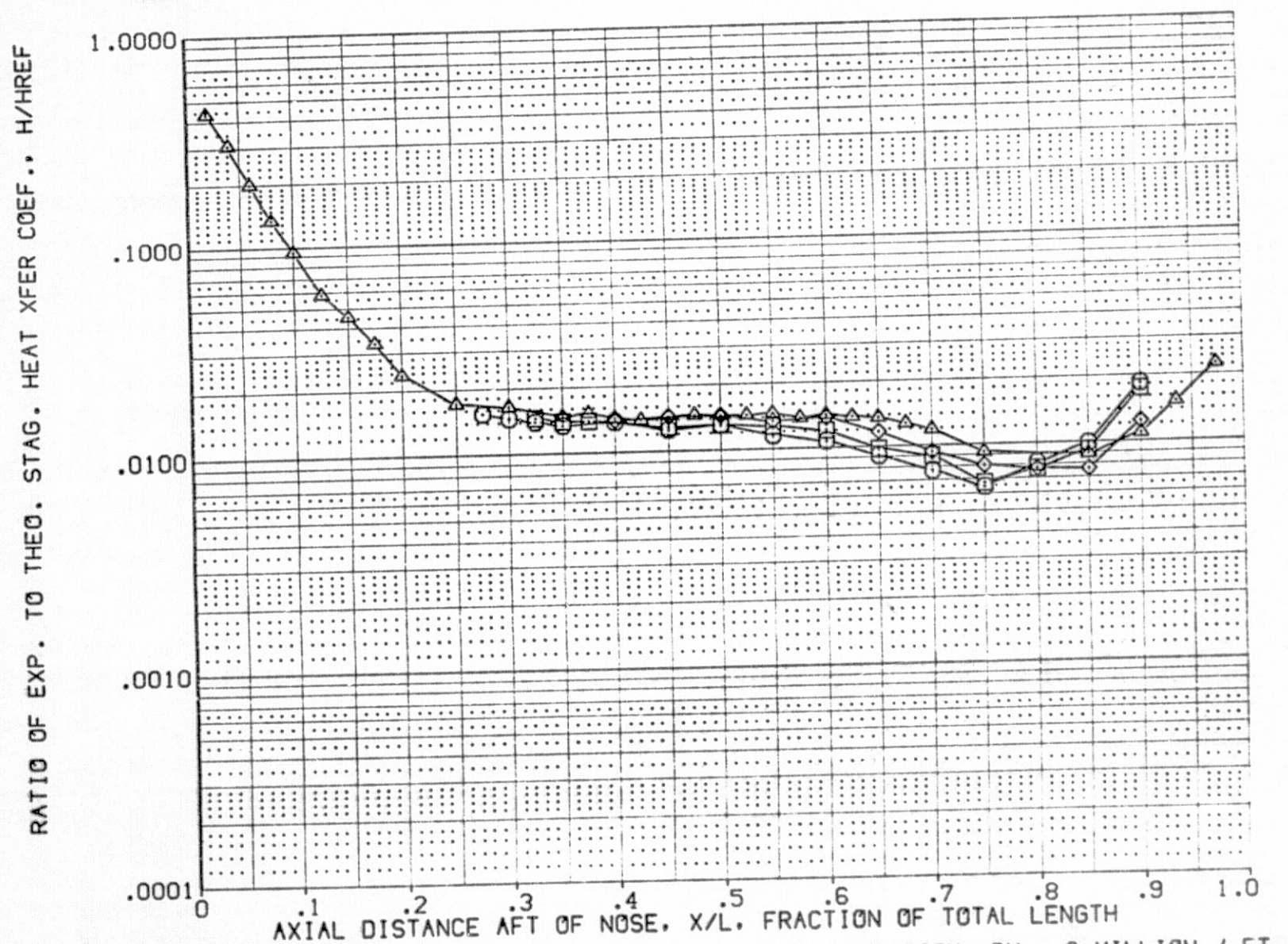
PARAMETRIC VALUES  
3.700 ALPHA .000


FIG. 26 ET ALONE

PHI VARIATION  $RN = 2$  MILLION / FT.





IH16 T8

EXTERNAL TANK SURFACE

(CPQT04)

SYMBOL	PHI	HAV/HT	RN/L
○	.000	.900	1.940
□	45.000		
◇	67.500		
△	90.000		

PARAMETRIC VALUES		
MACH	3.700	ALPHA
BETA	.000	-5.000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

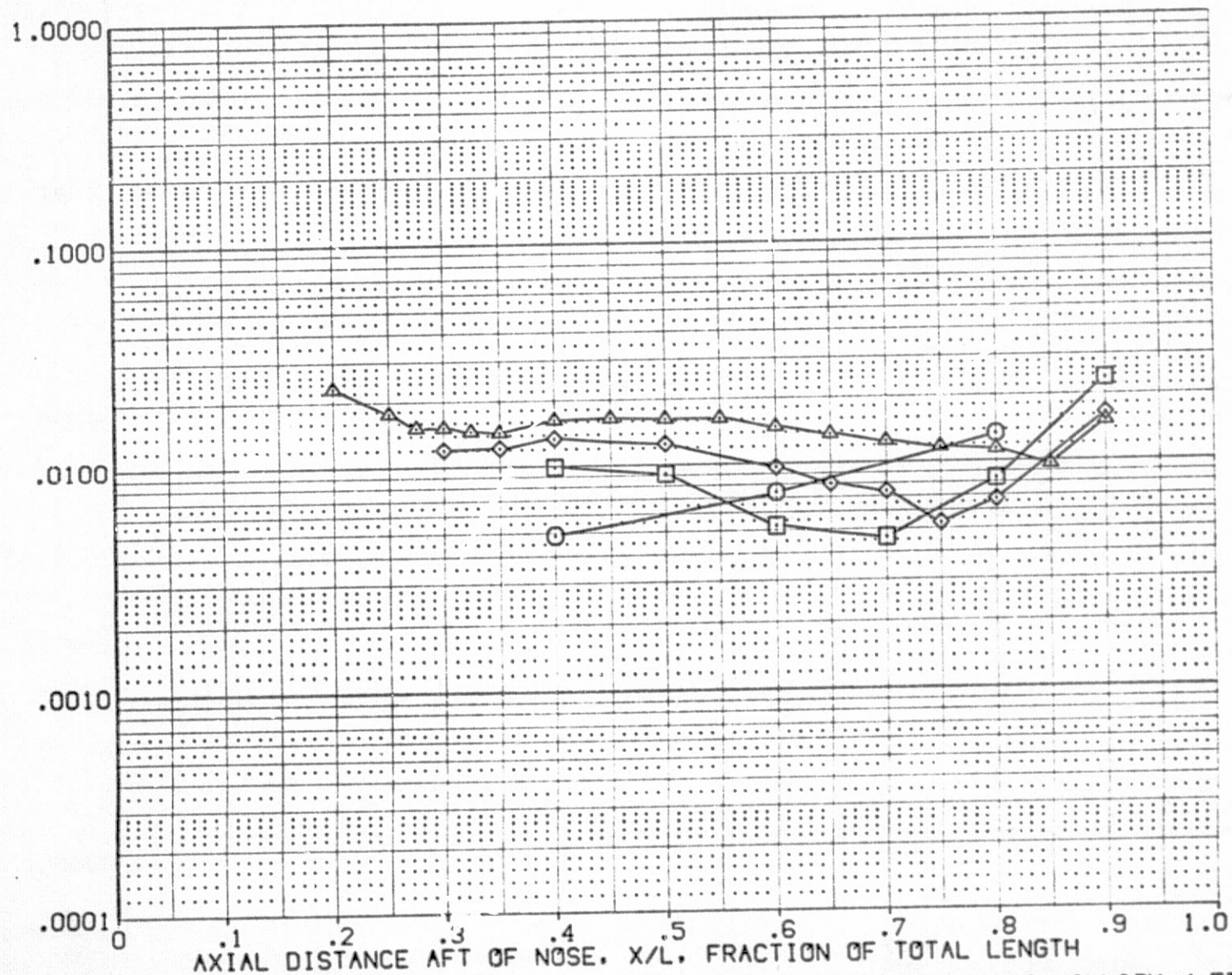


FIG. 26 ET ALONE

PHI VARIATION RN = 2 MILLION / FT.

IH16 T8

EXTERNAL TANK SURFACE

(CPQT04)

SYMBOL	PHI	HAW/HT	RN/L
○	112.500	.900	1.940
□	135.000		
◇	157.500		
△	180.000		

PARAMETRIC VALUES		
MACH	3.700	ALPHA
BETA	.000	-5.000

RATIO OF EXP. TO THEO. STAG. HEAT XFLR COEF., H/HREF

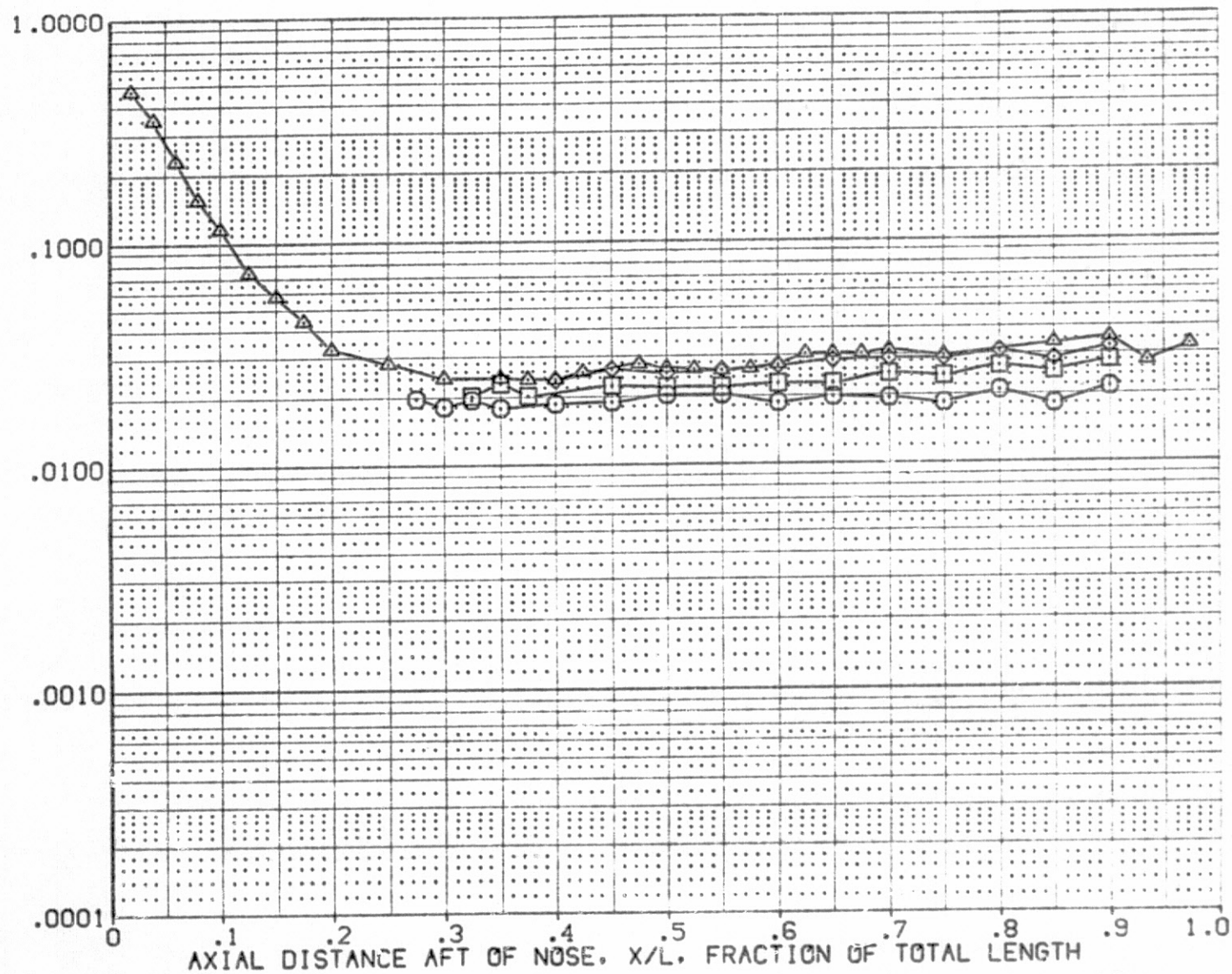


FIG. 26 ET ALONE

PHI VARIATION RN = 2 MILLION / FT.



IH16 T8 + GRIT

EXTERNAL TANK SURFACE

(CPQT18)

SYMBOL	PHI	HAW/HT	RN/L
○	.000	.900	1.940
□	45.000		
◇	67.500		
△	90.000		

MACH	BETA
3.700	.000

PARAMETRIC VALUES

ALPHA	GRITNO
.000	25.000

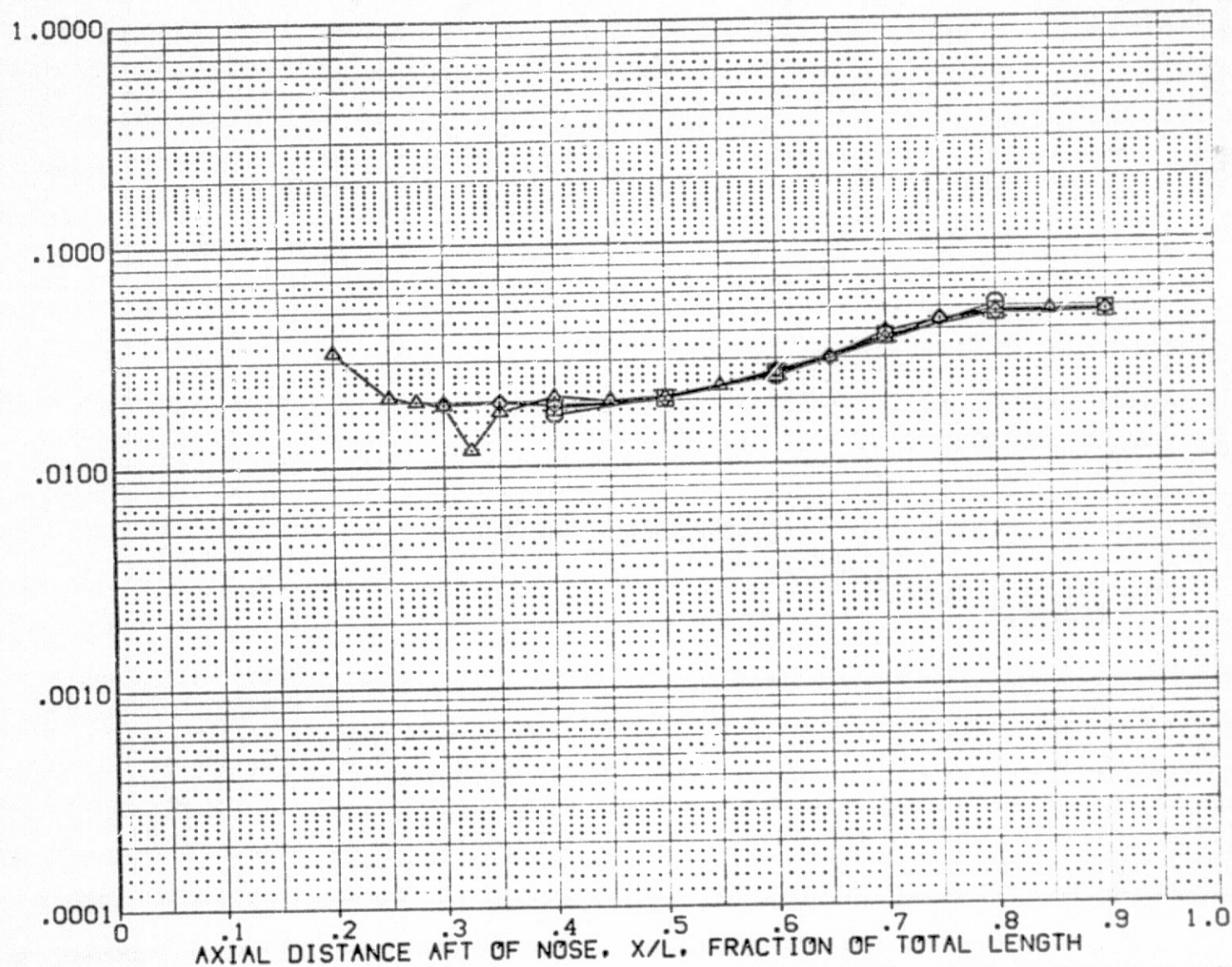
RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $H/H_{REF}$ 

FIG. 26 ET ALONE

PHI VARIATION RN = 2 MILLION / FT.

SYMBOL	PHI	HAW/HT	RN/L
○	112.500	.900	1.940
□	135.000		
◇	157.500		
△	180.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	GRITNO	25.000

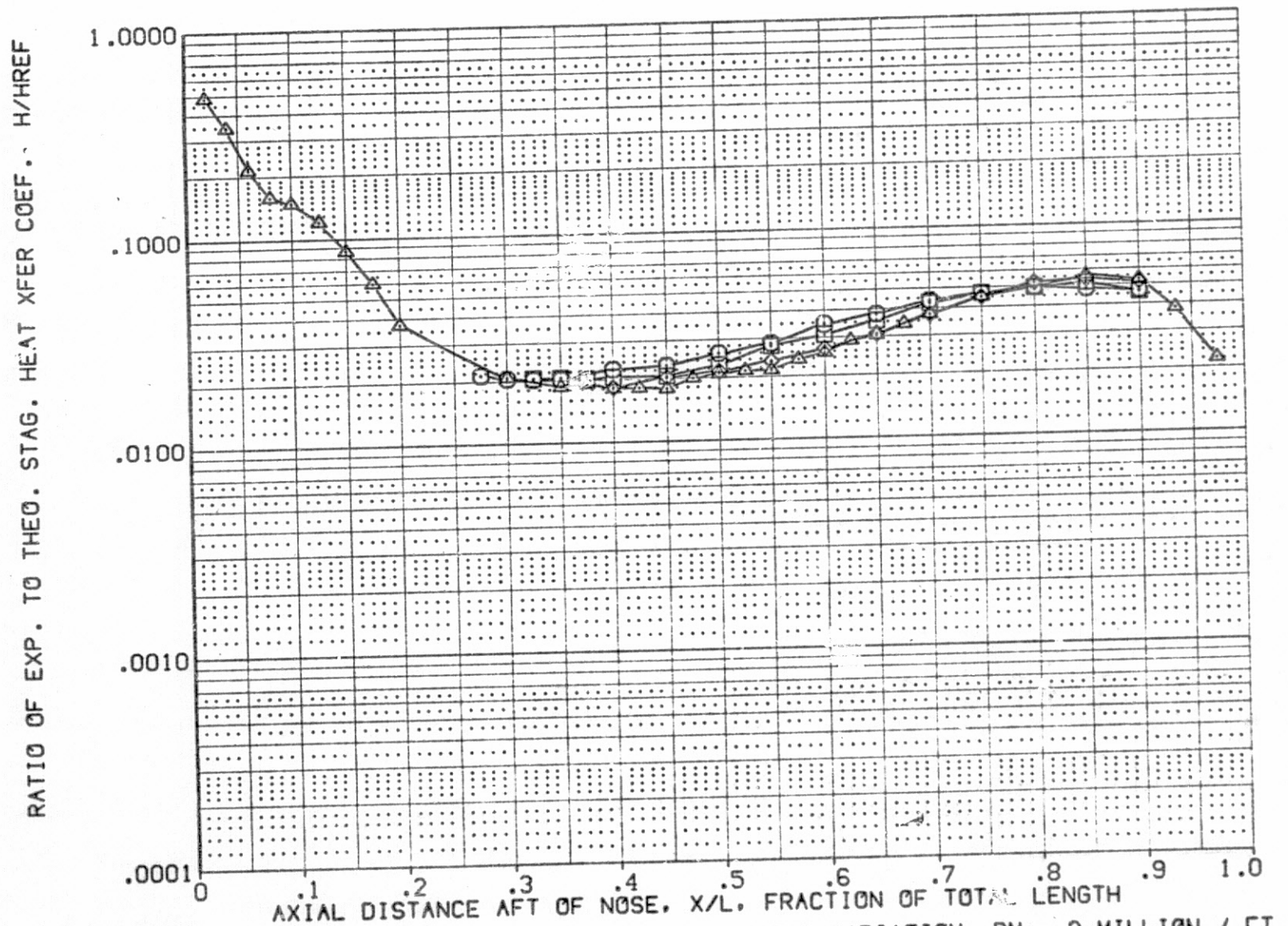


FIG. 26 ET ALONE

PHI VARIATION  $RN = 2 \text{ MILLION / FT.}$



IH16

T8

EXTERNAL TANK SURFACE

(CPQT03)

SYMBOL

PHI

HAW/HT

RN/L

PARAMETRIC VALUES

MACH  
BETA3.700  
.000

ALPHA

.000

○  
□  
◇  
△.000  
45.000  
67.500  
90.000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

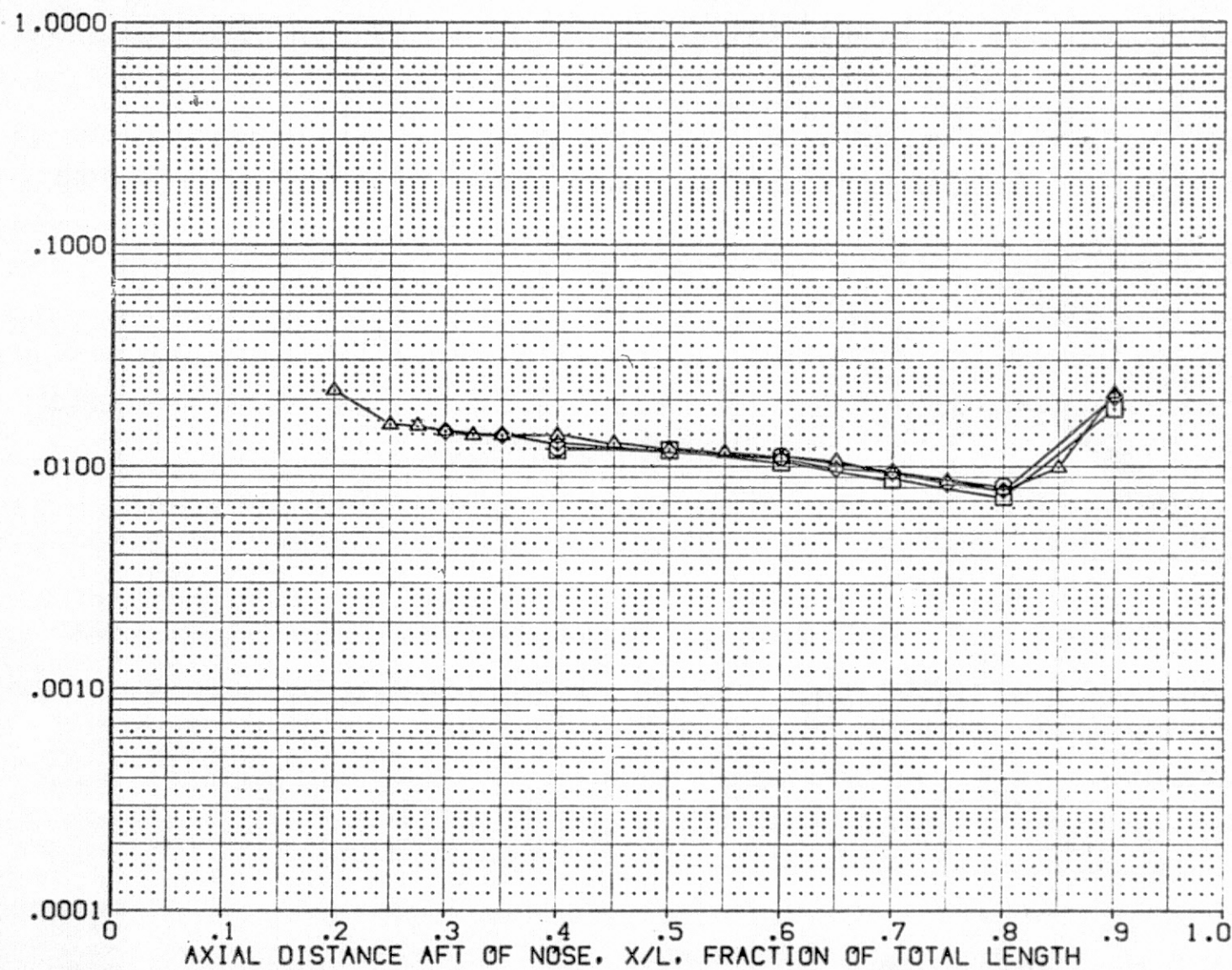


FIG. 27 ET ALONE

PHI VARIATION RN = 5 MILLION / FT.

IH16 T8

EXTERNAL TANK SURFACE

(CPQT03)

SYMBOL	PHI	HAW/HT	RN/L
○	112.500	.900	4.640
□	135.000		
◇	157.500		
△	180.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000		

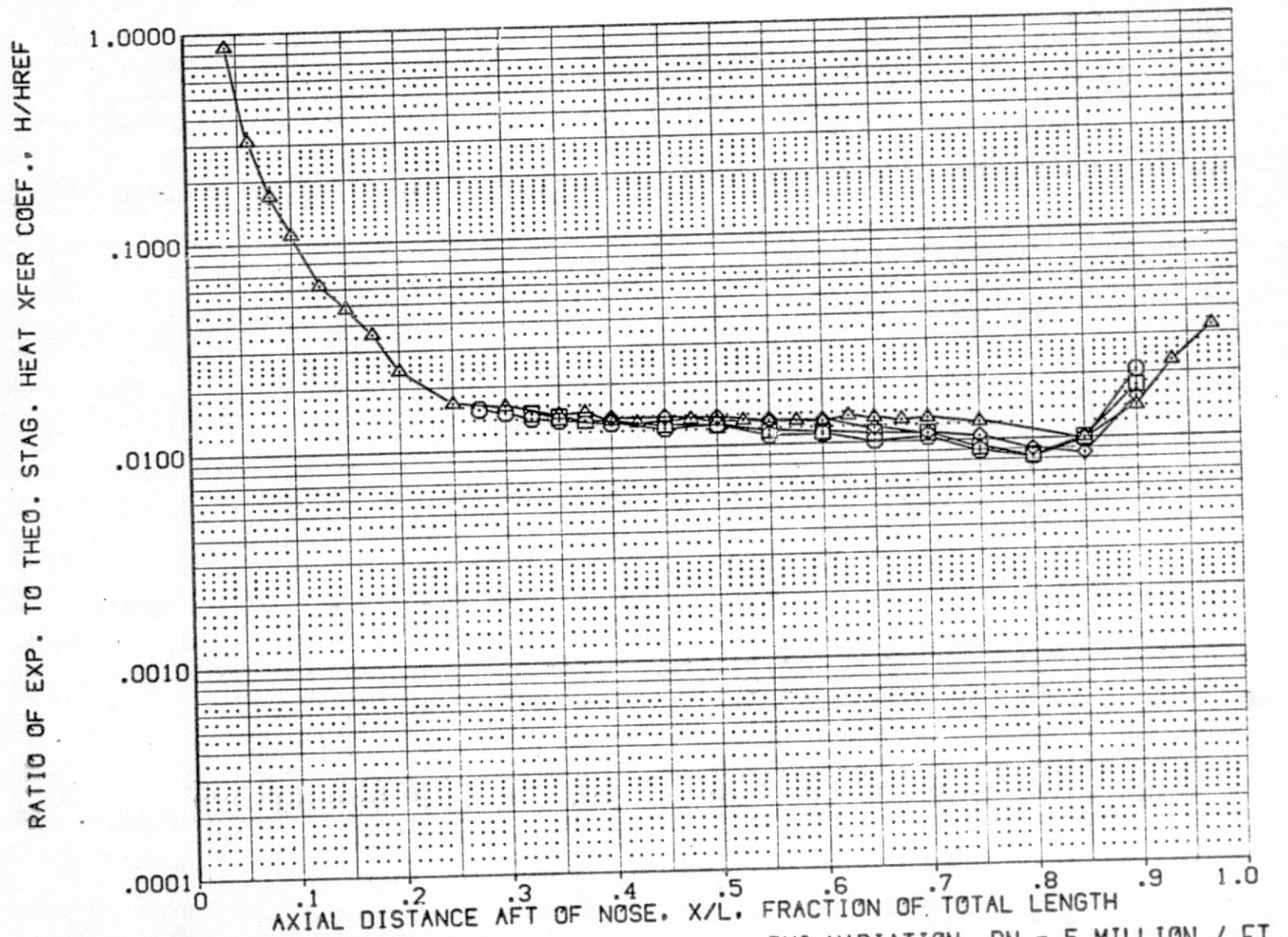


FIG. 27 ET ALONE

PHI VARIATION  $RN = 5 \text{ MILLION / FT.}$



IH16 T8

EXTERNAL TANK SURFACE

(CPQT04)

SYMBOL	PHI	HAW/HT	RN/L
○	.000	.900	4.630
□	45.000		
◇	67.500		
△	90.000		

MACH  
BETA

PARAMETRIC VALUES  
3.700 ALPHA  
.000

-5.000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.. H/HREF

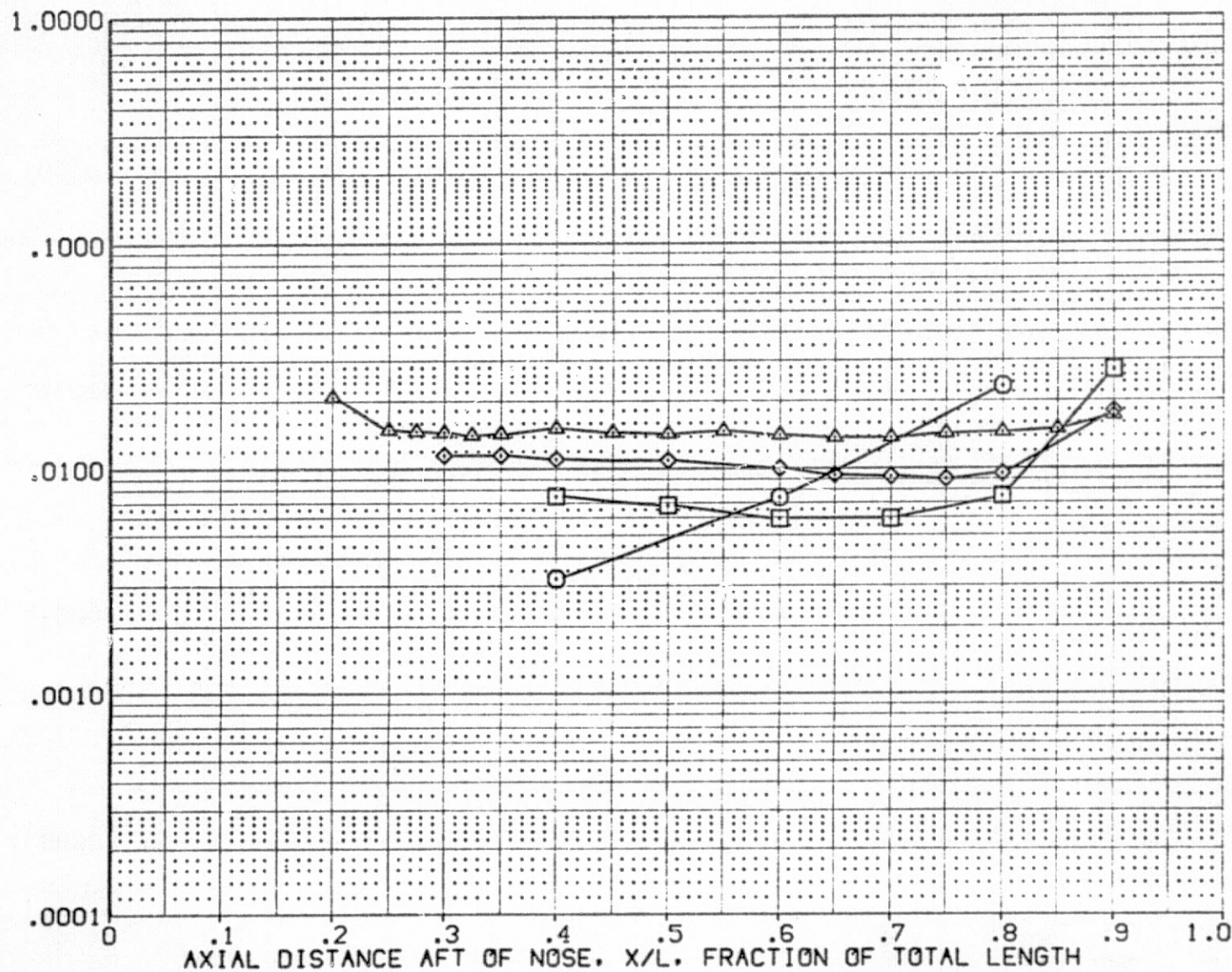


FIG. 27 ET ALONE

PHI VARIATION RN = 5 MILLION / FT.

IH16

T8

EXTERNAL TANK SURFACE

(CPQT04)

SYMBOL	PHI	HAW/HT	RN/L
○	112.500	.900	4.630
□	135.000		
◇	157.500		
△	180.000		

PARAMETRIC VALUES		
MACH	3.700	ALPHA
BETA	.000	-5.000

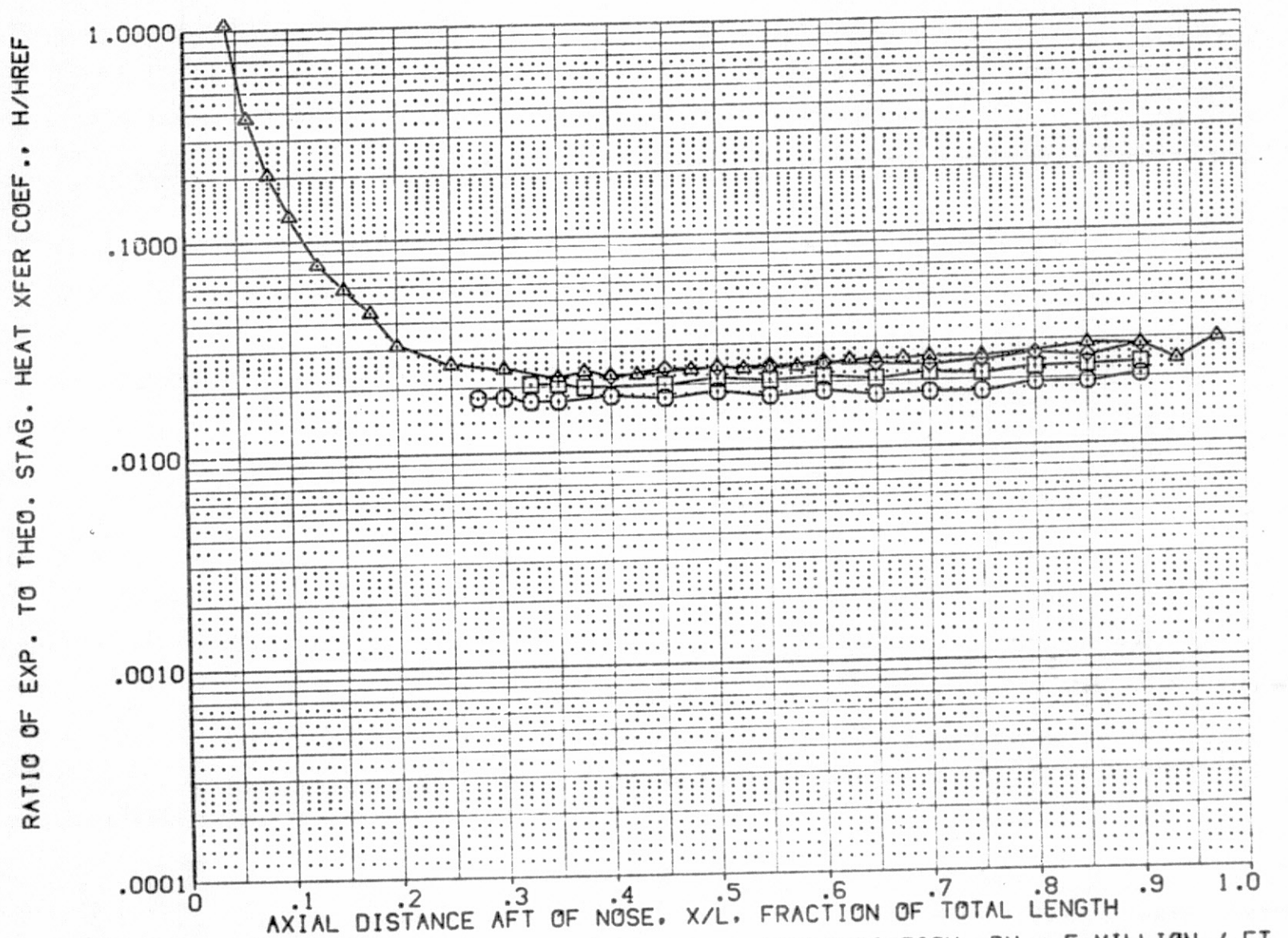


FIG. 27 ET ALONE

PHI VARIATION  $RN = 5 \text{ MILLION / FT.}$



IH16 T8 + GRIT

EXTERNAL TANK SURFACE

(CPQT18)

SYMBOL	PHI	HAW/HT	RN/L
○	.000	.900	4.580
□	45.000		
◇	67.500		
△	90.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	GRITNO	25.000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

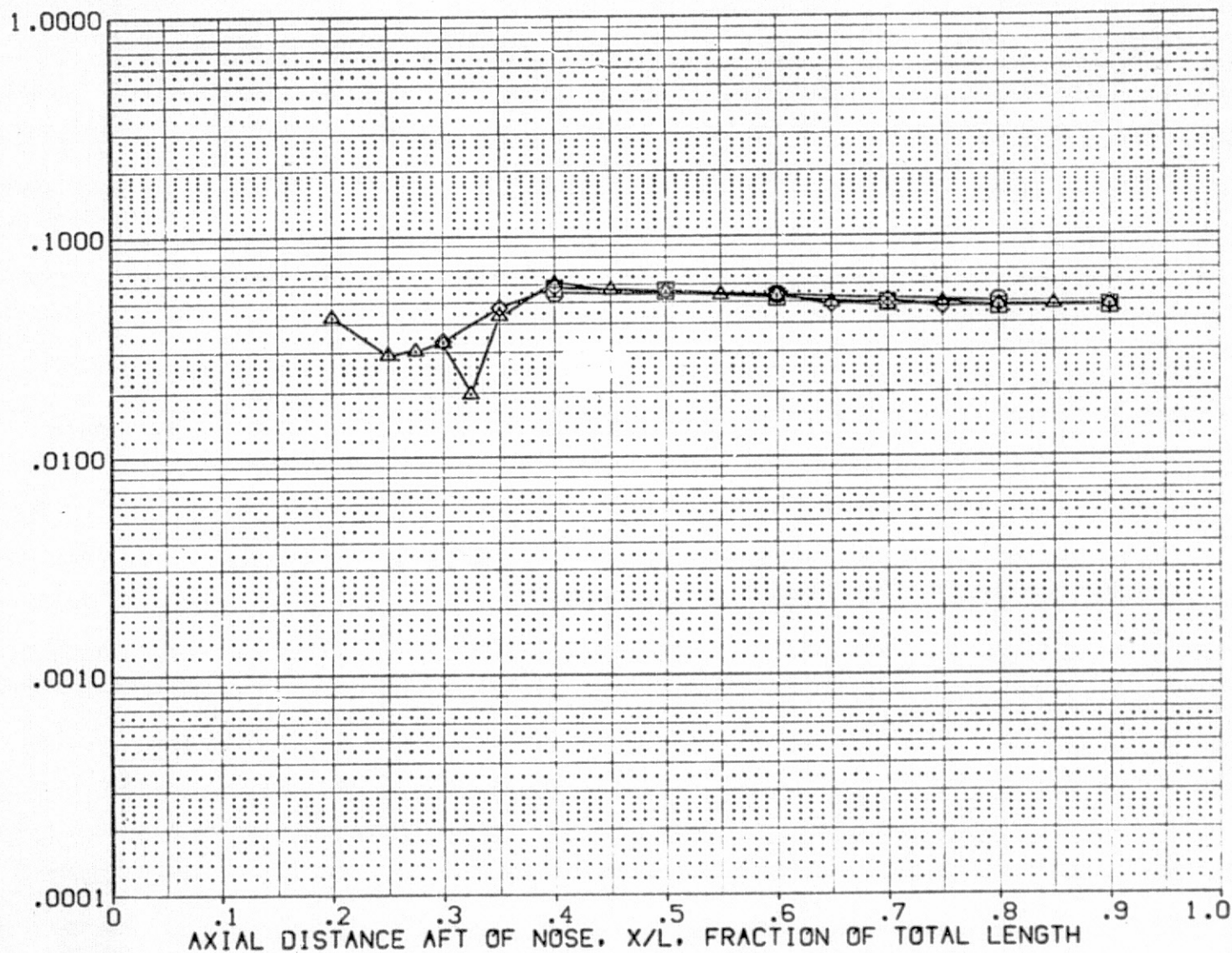


FIG. 27 ET ALONE

PHI VARIATION RN = 5 MILLION / FT.

IH16 T8 + GRIT

EXTERNAL TANK SURFACE

(CPQT18)

SYMBOL	PHI	HAW/HT	RN/L
○	112.500	.900	4.580
□	135.000		
◇	157.500		
△	180.000		

MACH	3.700	ALPHA	.000
BETA	.000	GRITNG	25.000

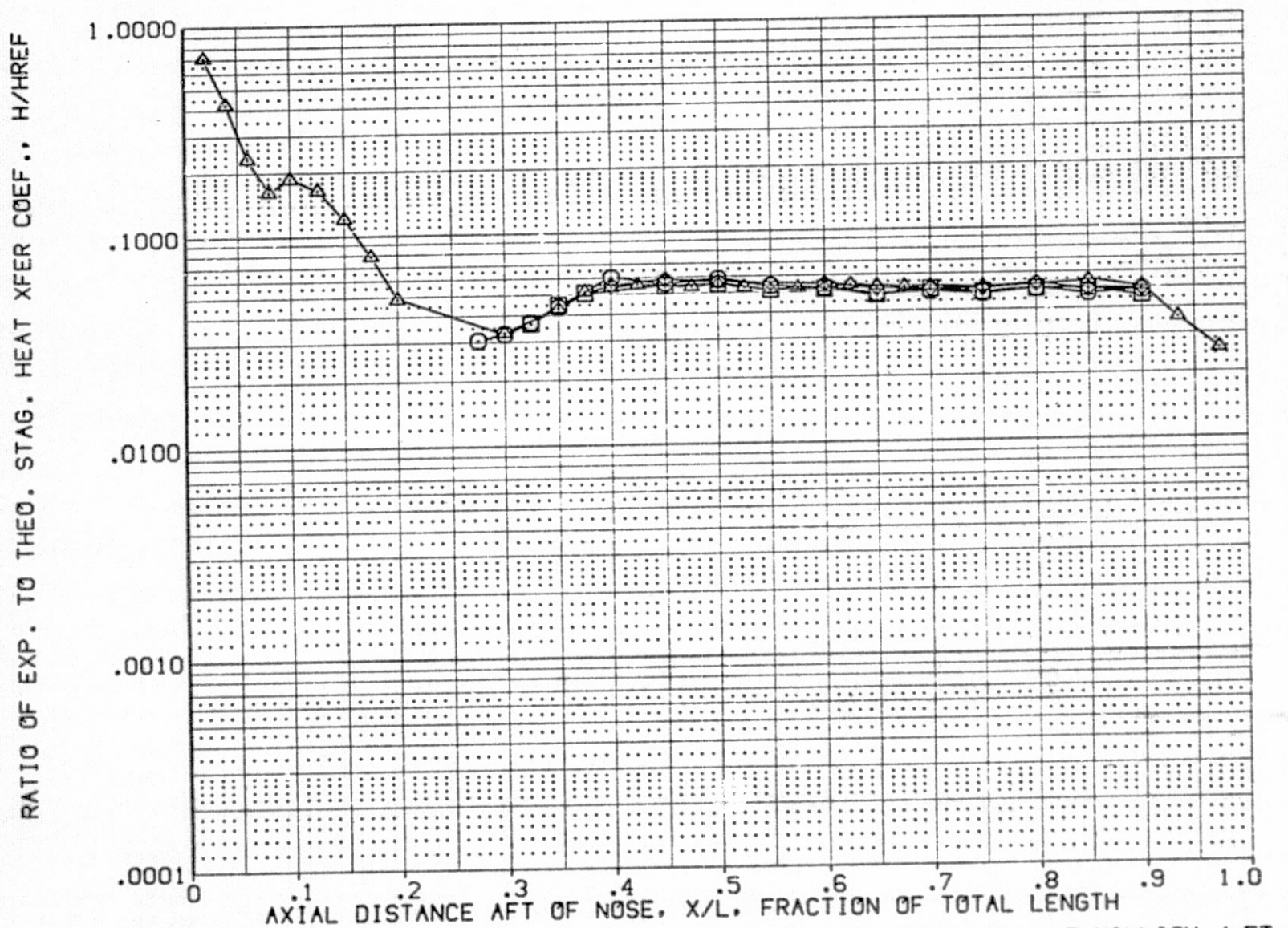


FIG. 27 ET ALONE

PHI VARIATION  $RN = 5 \text{ MILLION / FT.}$



SYMBOL	PHI	HAW/HT	RN/L
○	.000	.900	1.930
□	45.000		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
DELTAH	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

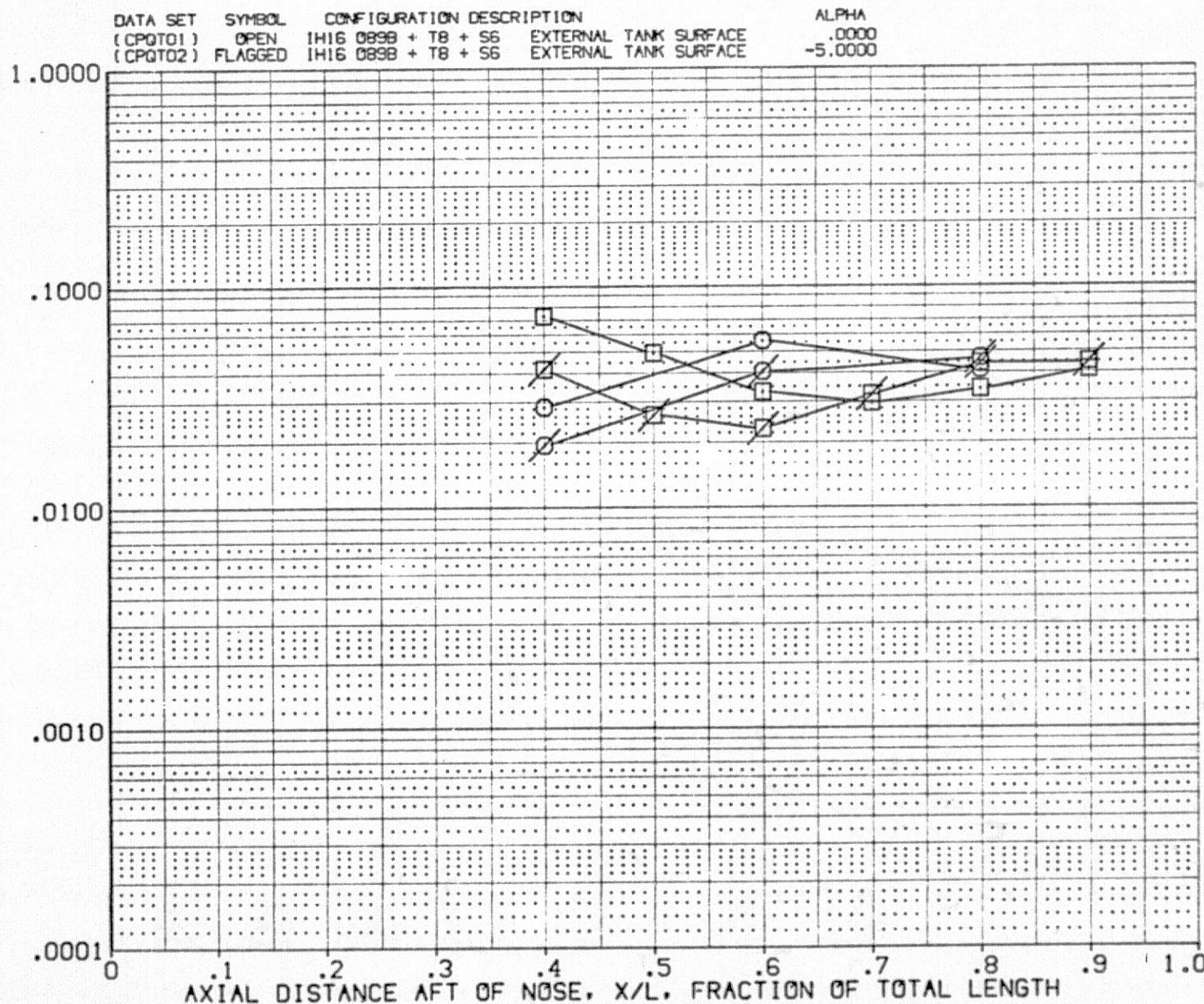


FIG. 28 INTEGRATED VEHICLE - ET SURFACE ALPHA VARIATION RN/FT = 2 DH = .175

SYMBOL PHI HAW/HT RN/L  
 ○ 67.500  
 □ 90.000

PARAMETRIC VALUES  
 MACH 3.700 BETA .000  
 DELTAH .175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

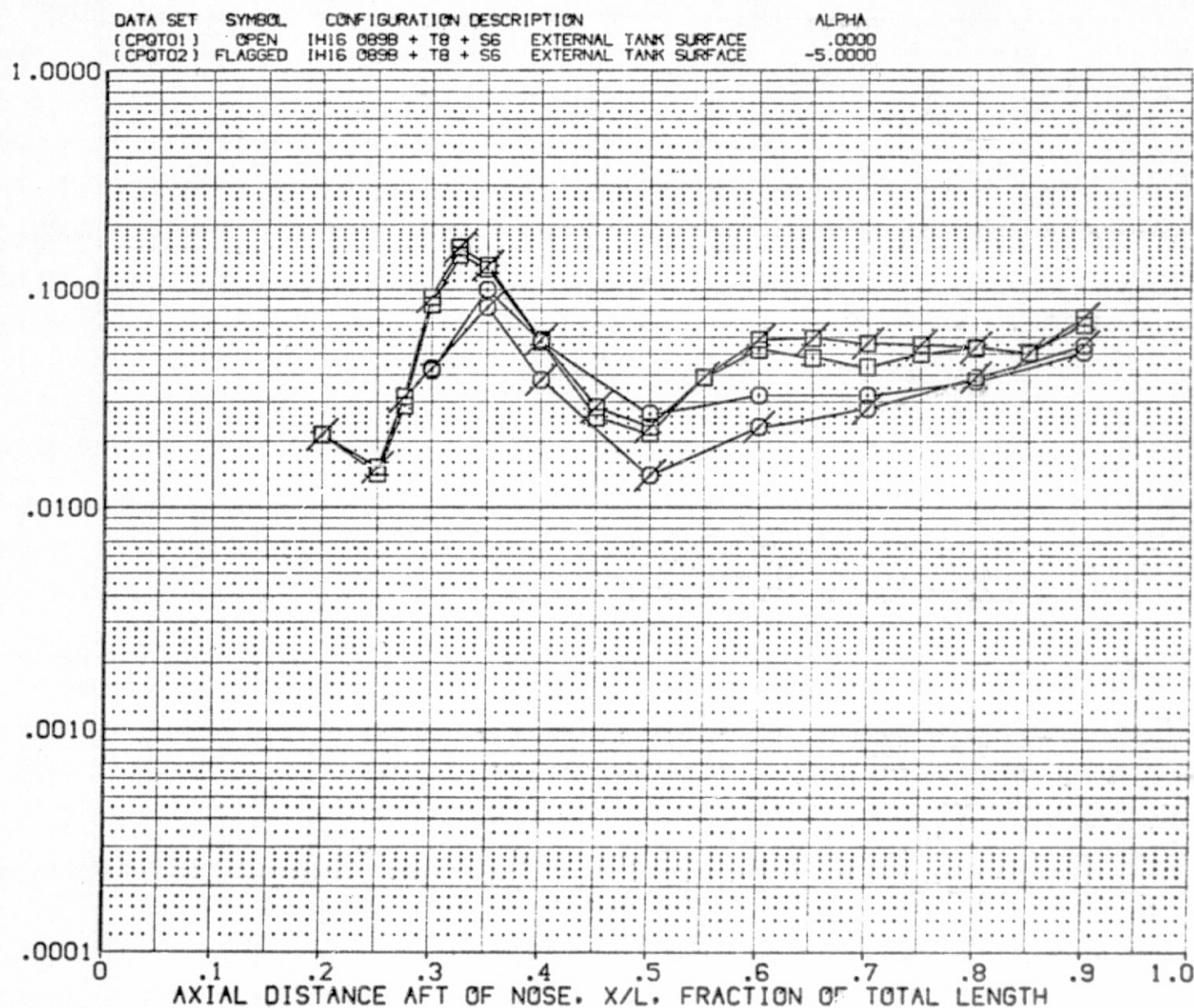


FIG. 28 INTEGRATED VEHICLE - ET SURFACE ALPHA VARIATION RN/FT = 2 DH = .175



SYMBOL	PHI	HAV/HT	RN/L
○	112.500	.900	1.930
□	135.000		

PARAMETRIC VALUES		
MACH	3.700	BETA .000
DELTAH	.175	

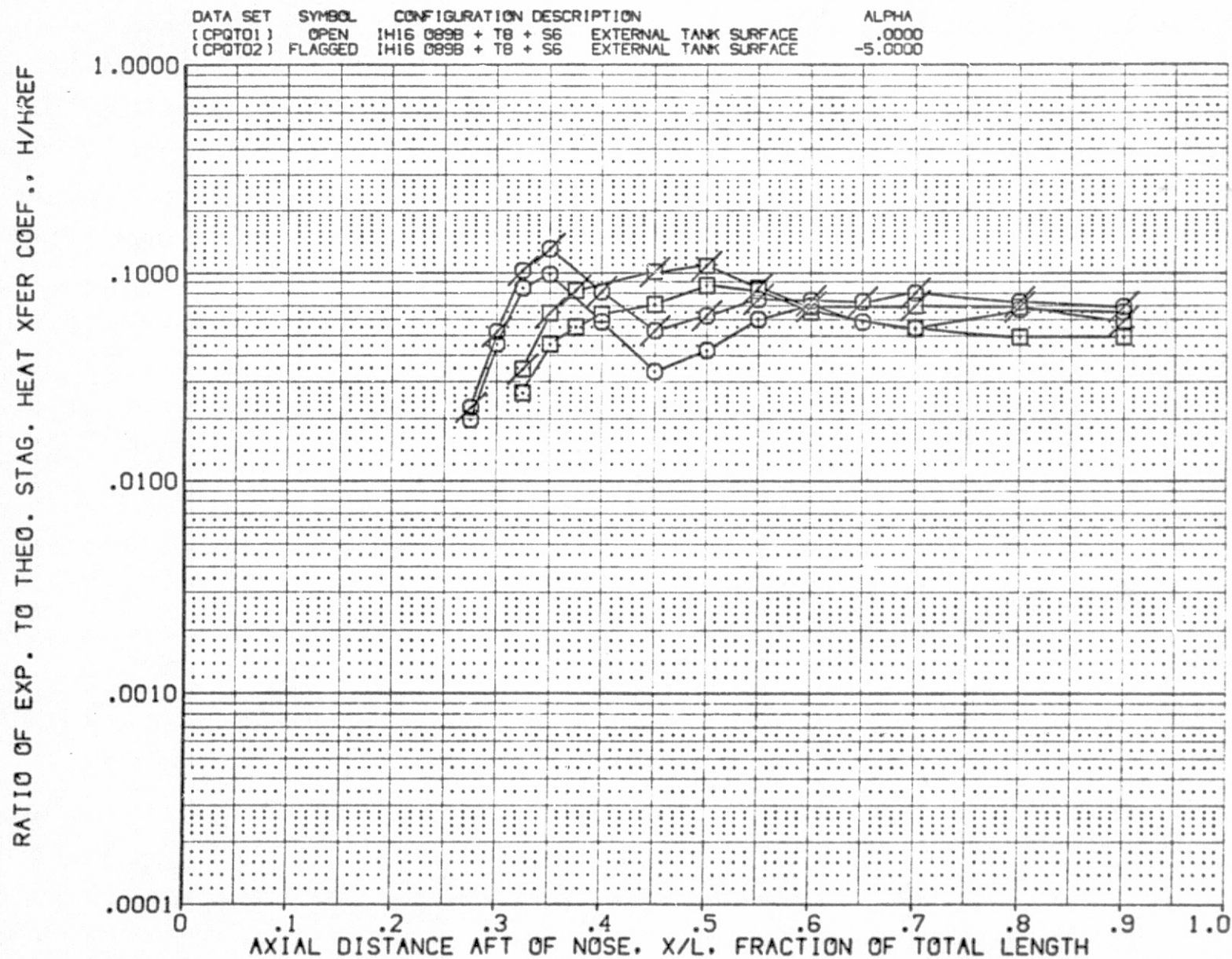


FIG. 28 INTEGRATED VEHICLE - ET SURFACE ALPHA VARIATION RN/FT = 2 DH = .175

SYMBOL PHI HAV/HT RN/L  
 ○ 157.500 .900 1.930  
 □ 180.000

PARAMETRIC VALUES  
 MACH 3.700 BETA .000  
 DELTAH .175

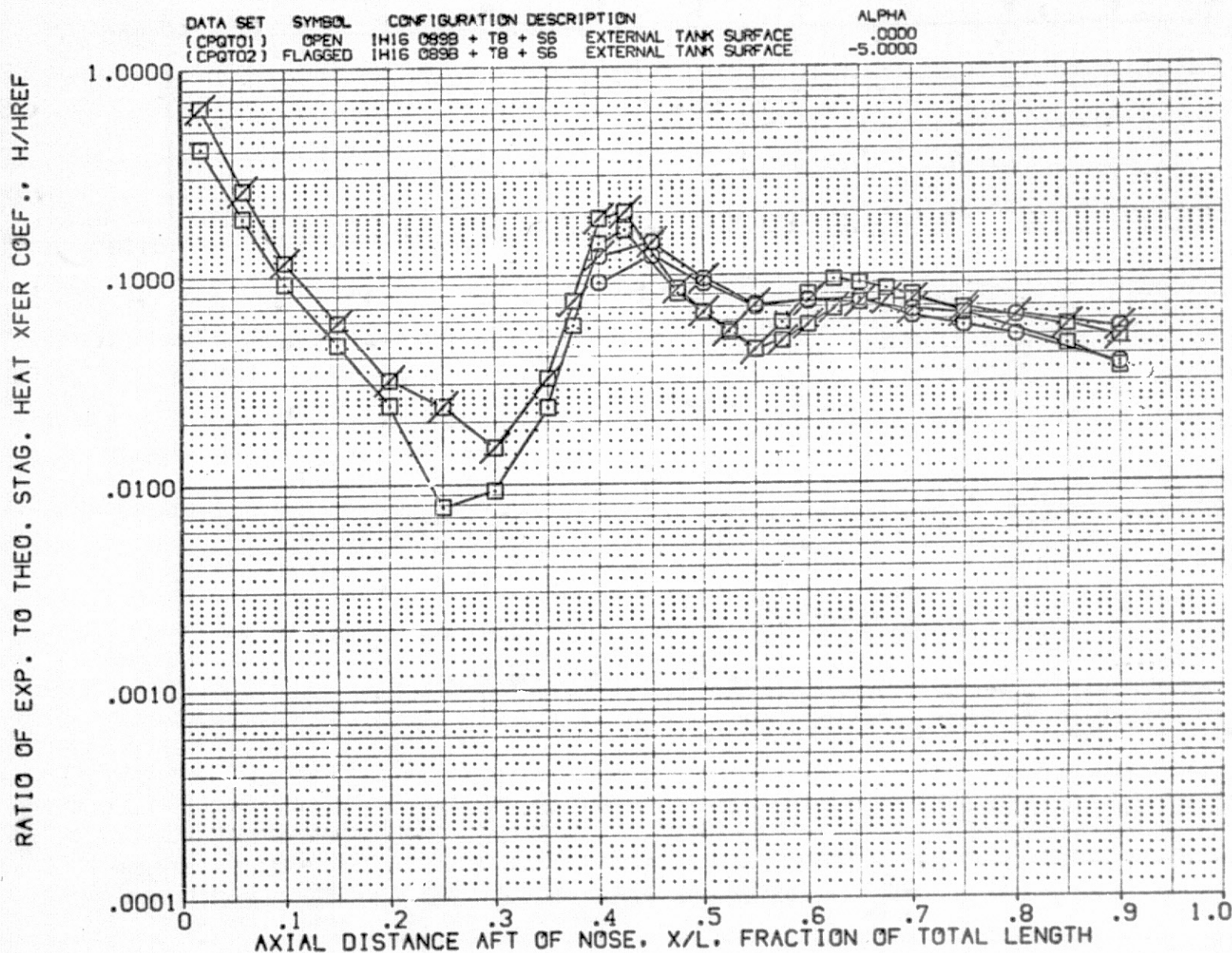


FIG. 28 INTEGRATED VEHICLE - ET SURFACE ALPHA VARIATION  $RN/FT = 2$   $DH = .175$



SYMBOL	PHI	HAV/HT	RN/L
○	.000	.900	1.990
□	45.000		

PARAMETRIC VALUES		
MACH	3.700	BETA
DELTAH	.069	.000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

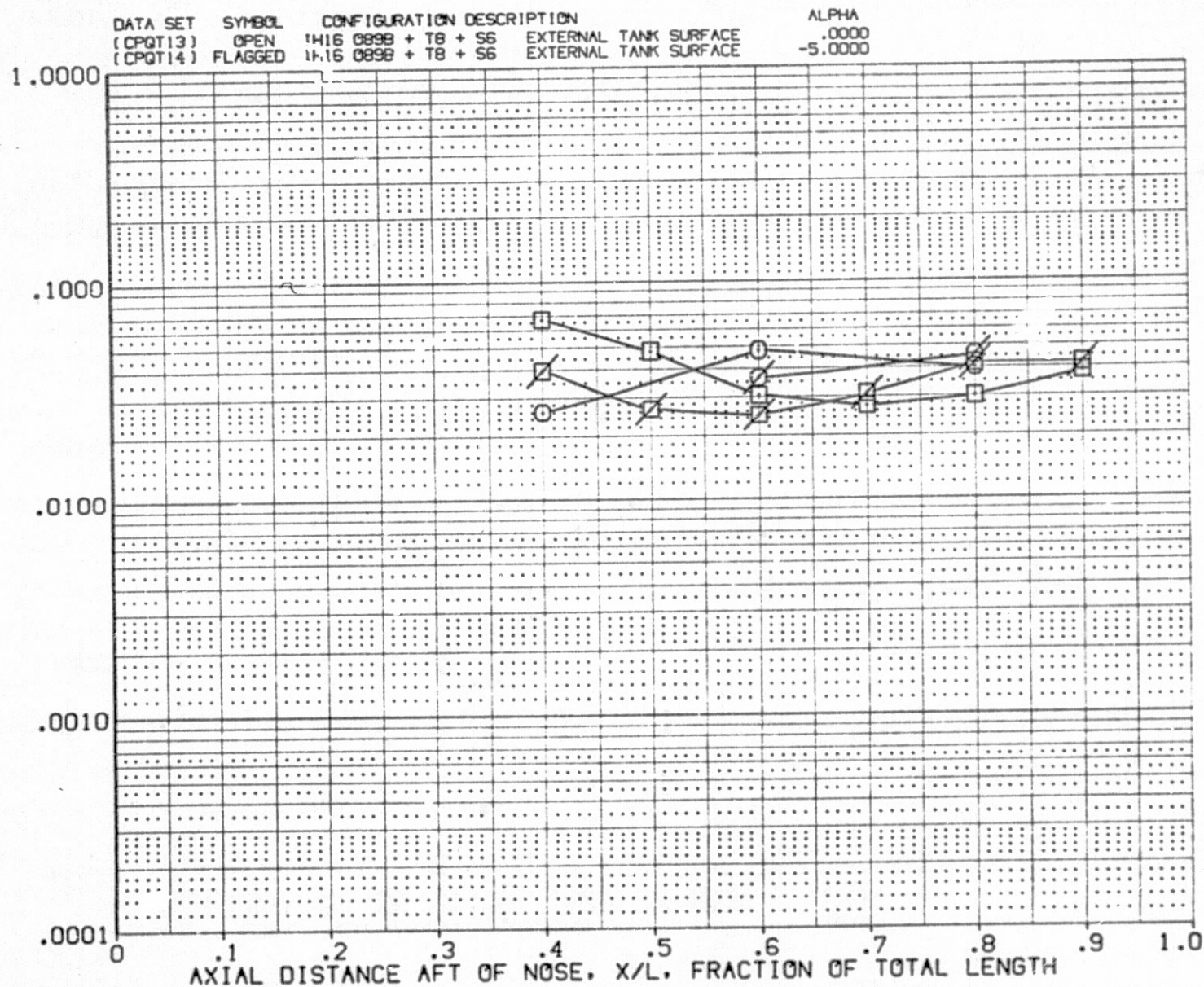


FIG. 29 INTEGRATED VEHICLE - ET SURFACE ALPHA VARIATION RN/FT = 2 DH = .069

SYMBOL PHI HAW/HT RN/L  
 67.500 .900 1.990  
 90.000

PARAMETRIC VALUES  
 MACH 3.700 BETA .000  
 DELTAH .069

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

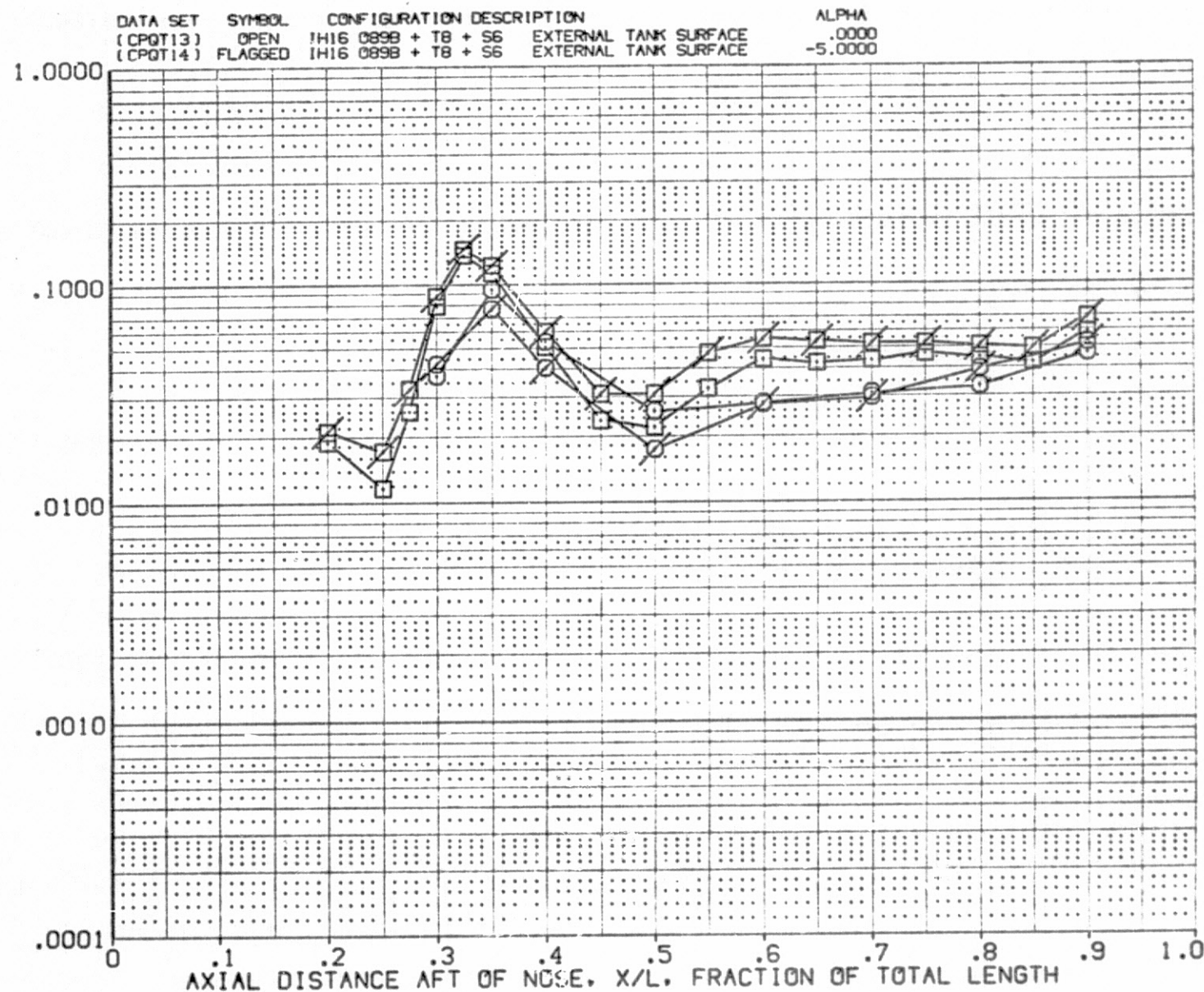


FIG. 29 INTEGRATED VEHICLE - ET SURFACE ALPHA VARIATION RN/FT = 2 DH = .069



SYMBOL	PHI	HAW/HT	RN/L
○	112.500	.900	1.990
□	135.000		

PARAMETRIC VALUES	
MACH	3.700
BETA	.069
DELTAH	.000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

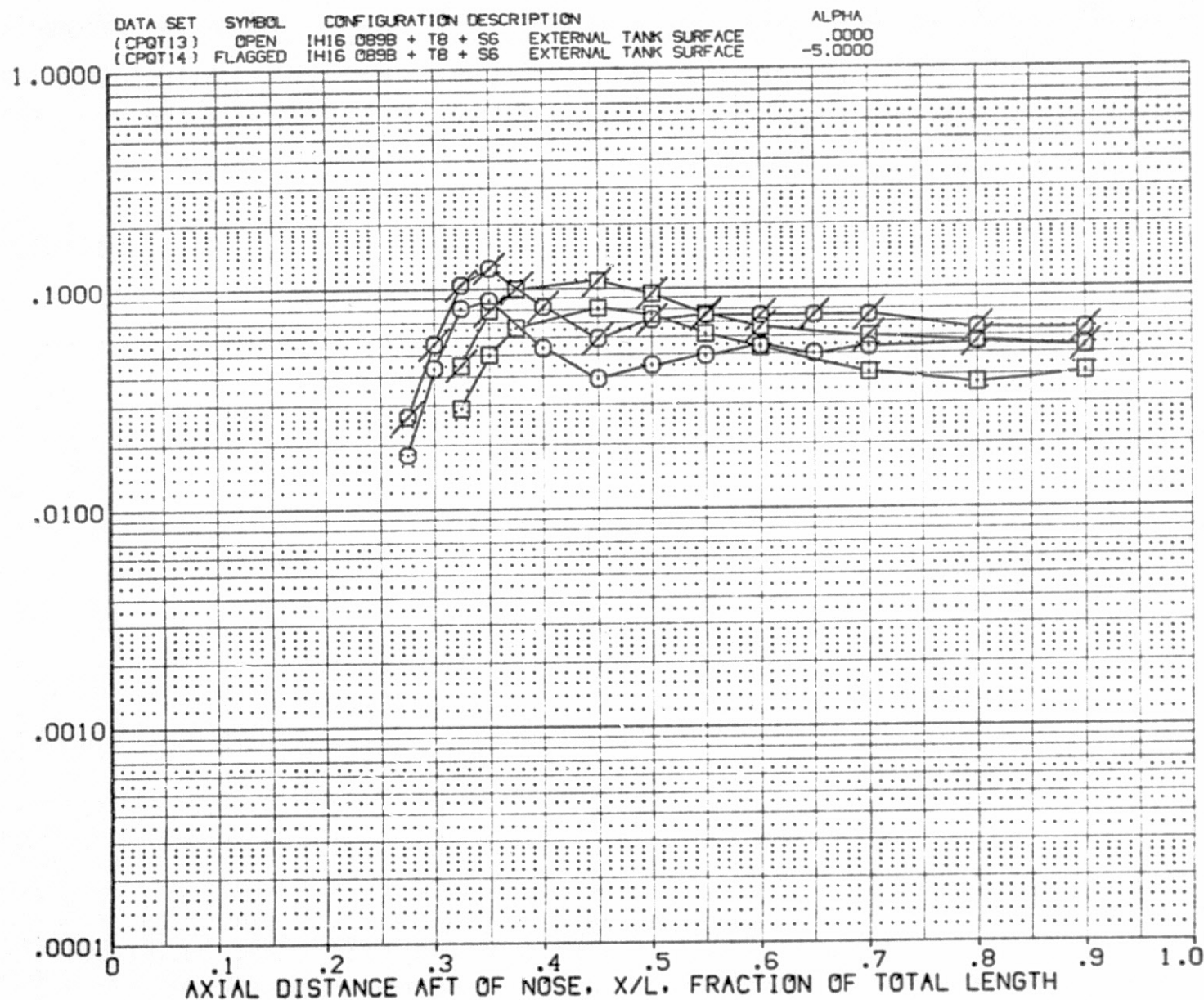


FIG. 29 INTEGRATED VEHICLE - ET SURFACE ALPHA VARIATION RN/FT = 2 DH = .069

SYMBOL PHI HAV/HT RN/L  
 ○ 157.500  
 □ 180.000

PARAMETRIC VALUES  
 MACH 3.700 BETA .000  
 DELTAH .069

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $H/H_{REF}$

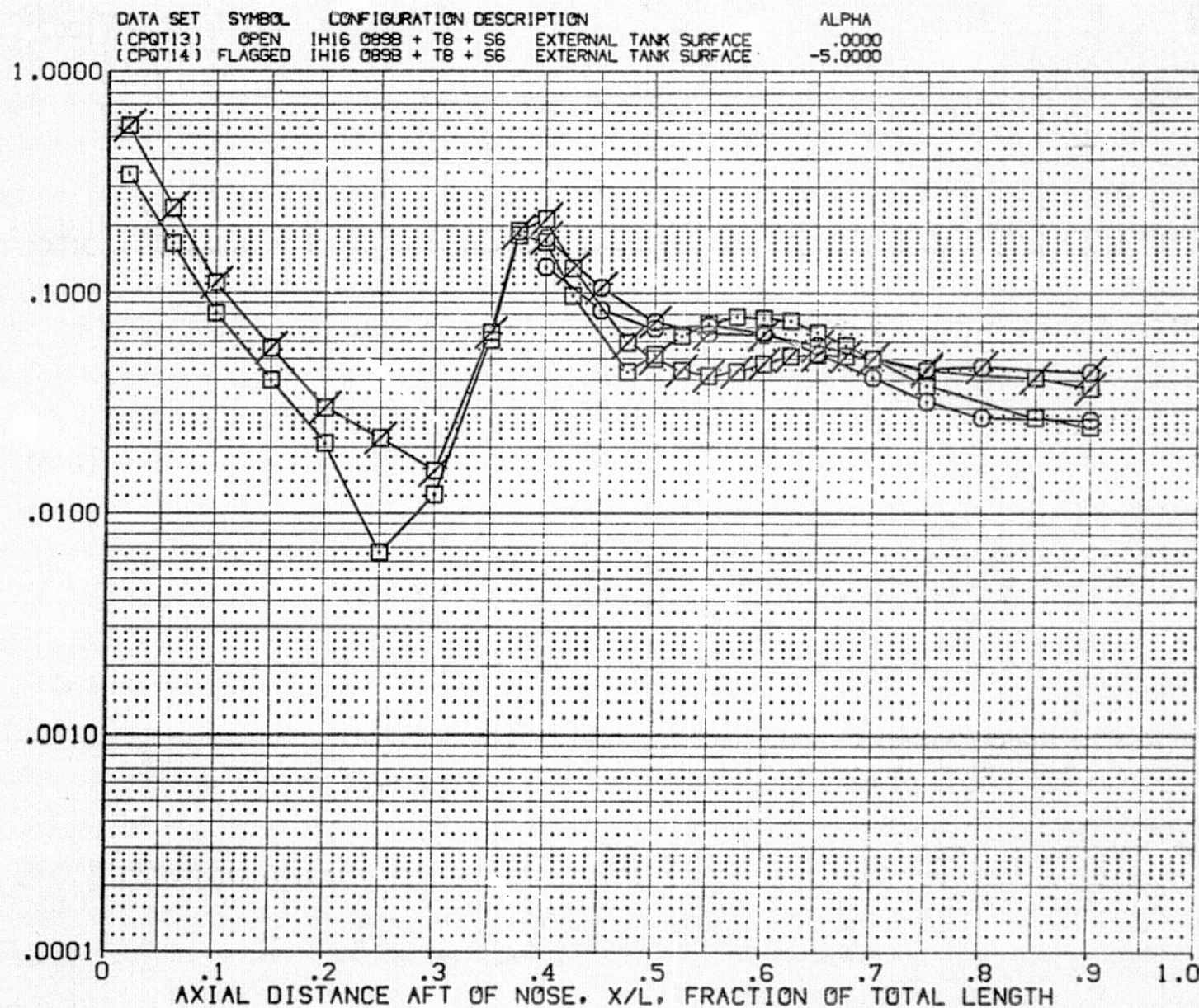


FIG. 29 INTEGRATED VEHICLE - ET SURFACE ALPHA VARIATION  $RN/FT = 2$   $DH = .069$



SYMBOL	PHI	HAW/HT	RN/L
○	.000	.900	4.570
□	45.000		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
DELTAH	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

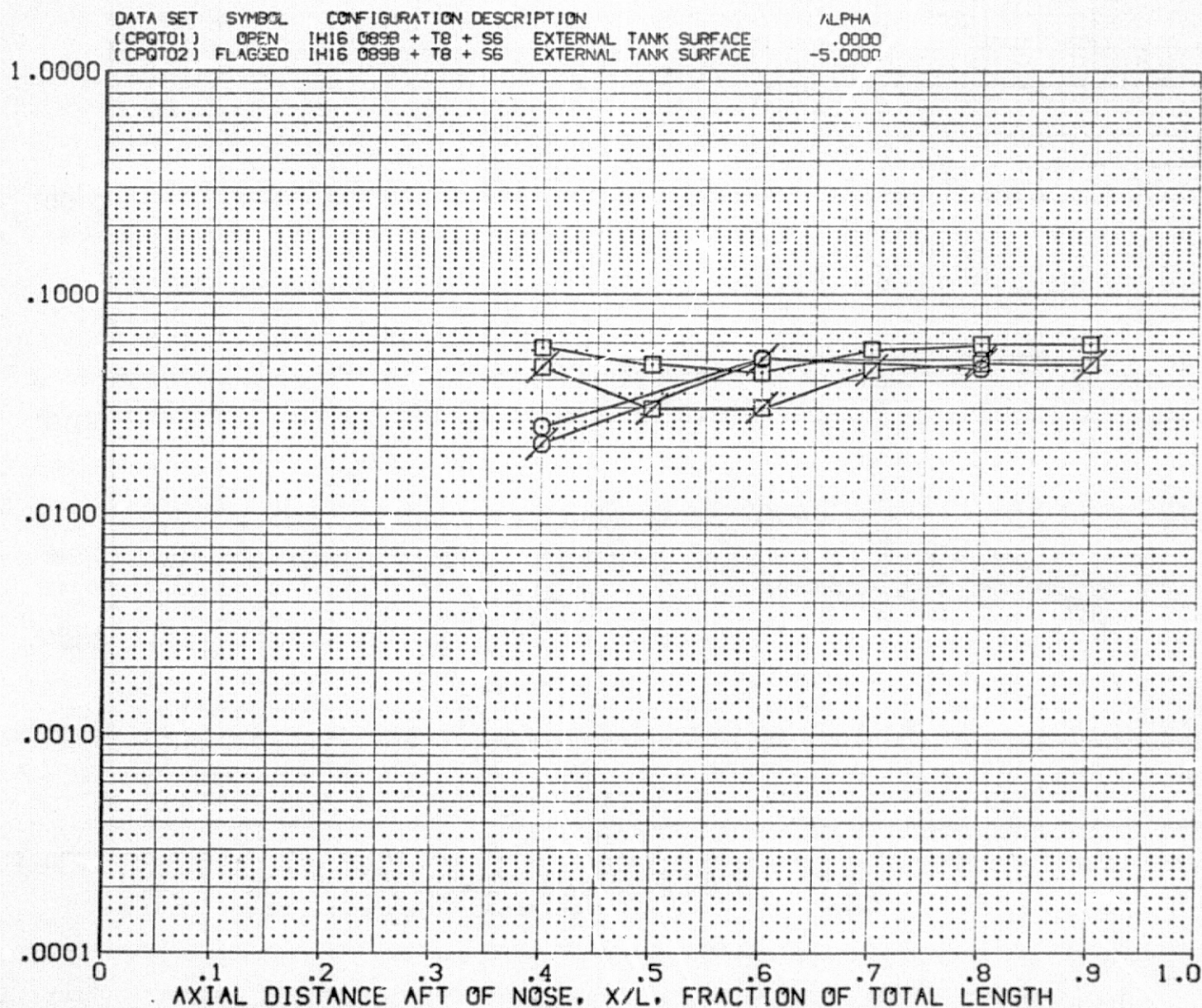


FIG. 30 INTEGRATED VEHICLE - ET SURFACE ALPHA VARIATION RN/FT = 5 DH = .175

SYMBOL	PHI	HAW/HT	RN/L
○	67.500	.900	4.570
□	90.000		

PARAMETRIC VALUES		
MACH	3.700	BETA .000
DELTAH	.175	

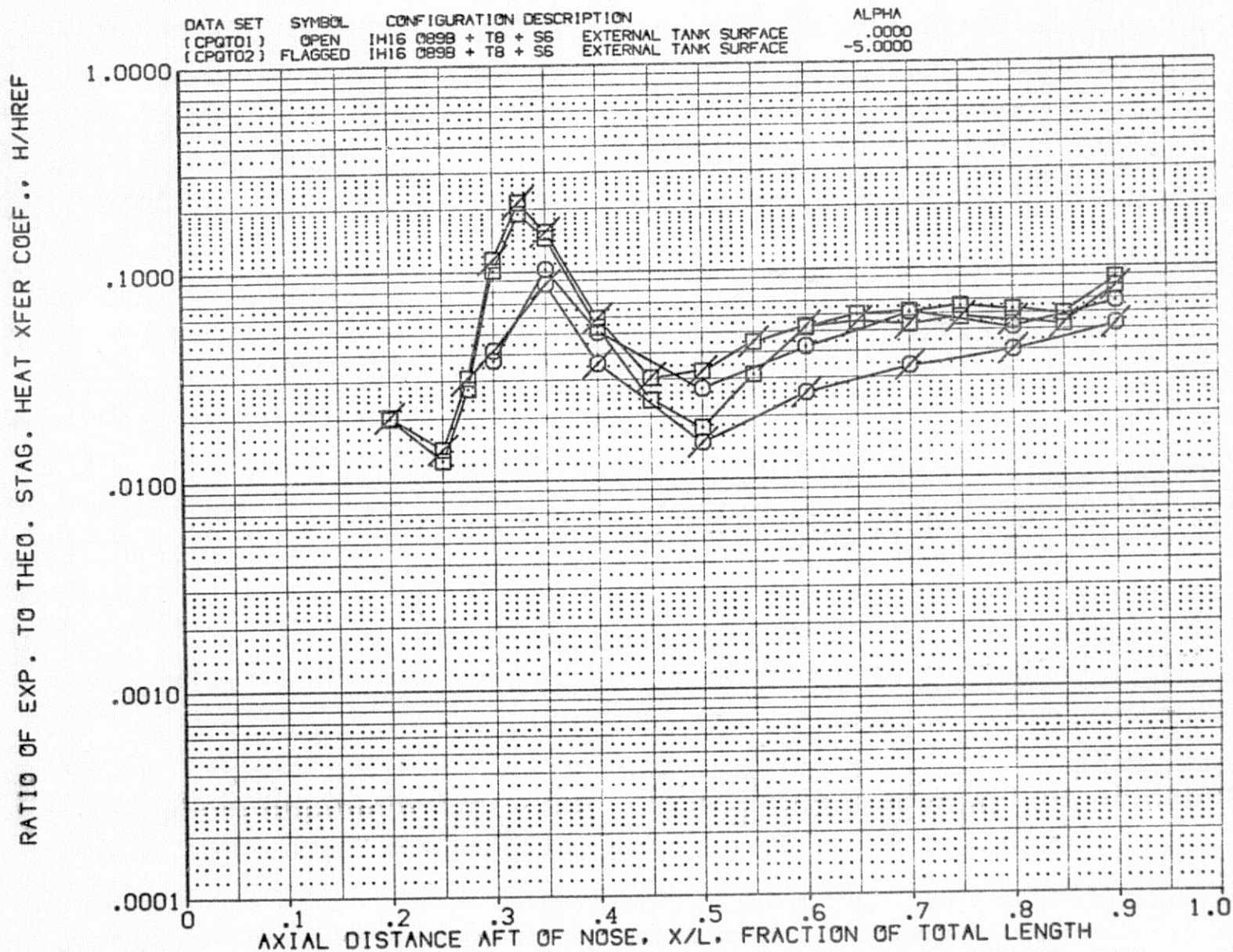


FIG. 30 INTEGRATED VEHICLE - ET SURFACE ALPHA VARIATION RN/FT = 5 DH = .175



SYMBOL PHI HAW/HT RN/L  
 ○ 112.500 .900 4.570  
 □ 135.000

PARAMETRIC VALUES  
 MACH 3.700 BETA .000  
 DELTAH .175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

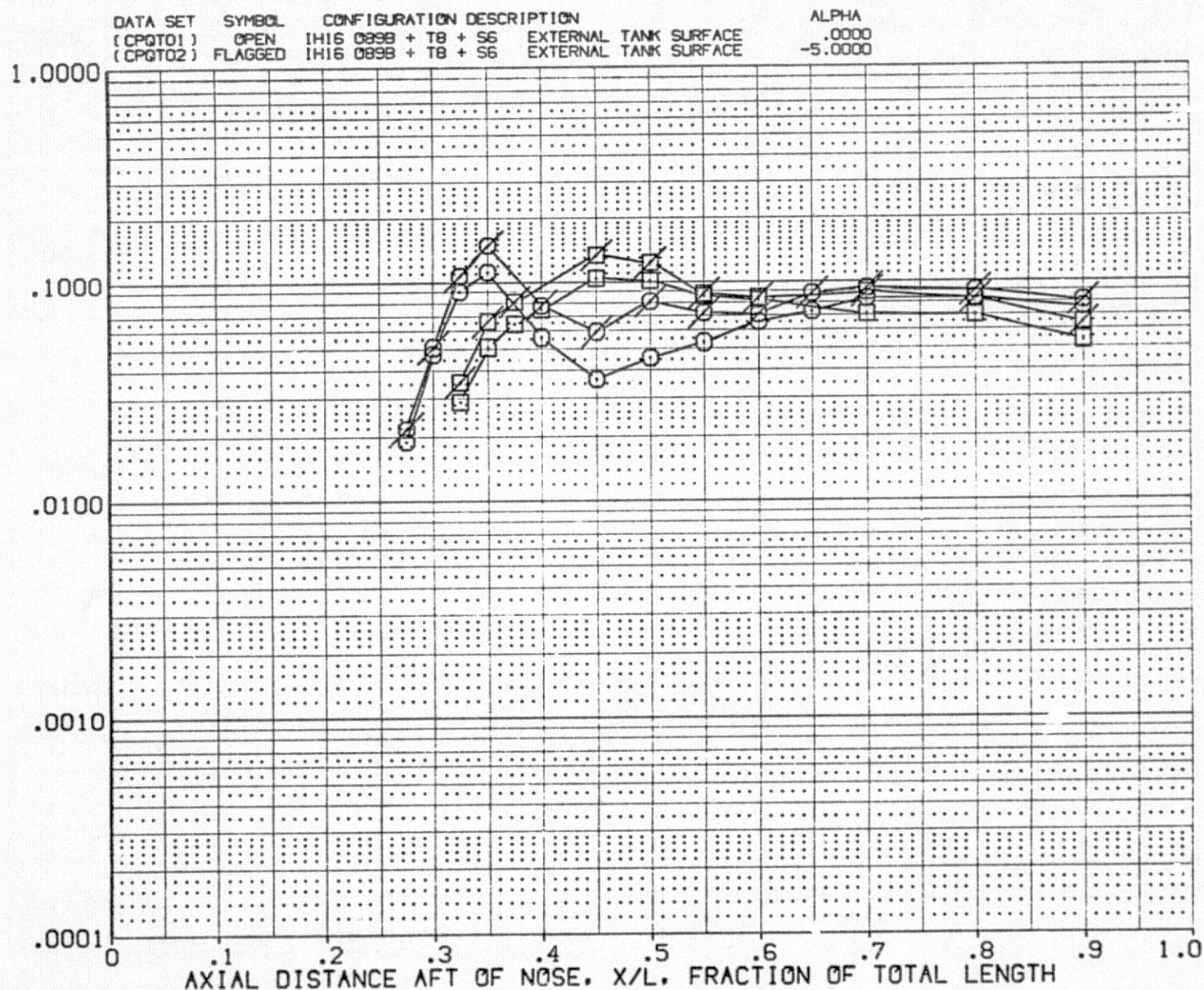


FIG. 30 INTEGRATED VEHICLE - ET SURFACE ALPHA VARIATION RN/FT = 5 DH = .175



SYMBOL PHI HAV/HT RN/L  
 ○ 157.500 .900 4.570  
 □ 180.000

PARAMETRIC VALUES  
 MACH 3.700 BETA .000  
 DELTAH .175

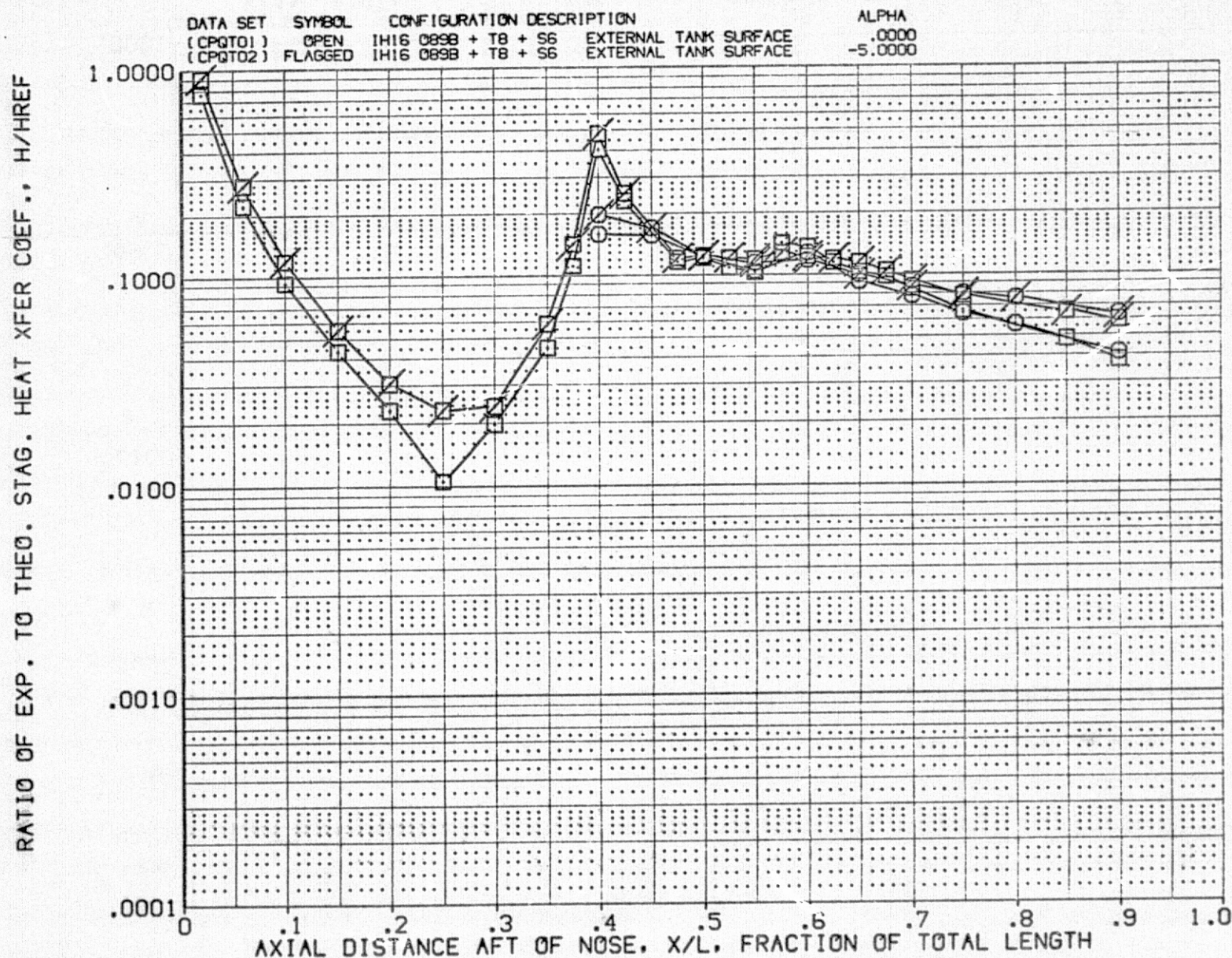


FIG. 30 INTEGRATED VEHICLE - ET SURFACE ALPHA VARIATION RN/FT = 5 DH = .175



SYMBOL PHI HAW/HT RN/L  
 O .000 .900 4.550  
 □ 45.000

PARAMETRIC VALUES  
 MACH 3.700 BETA .000  
 DELTAH .069

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

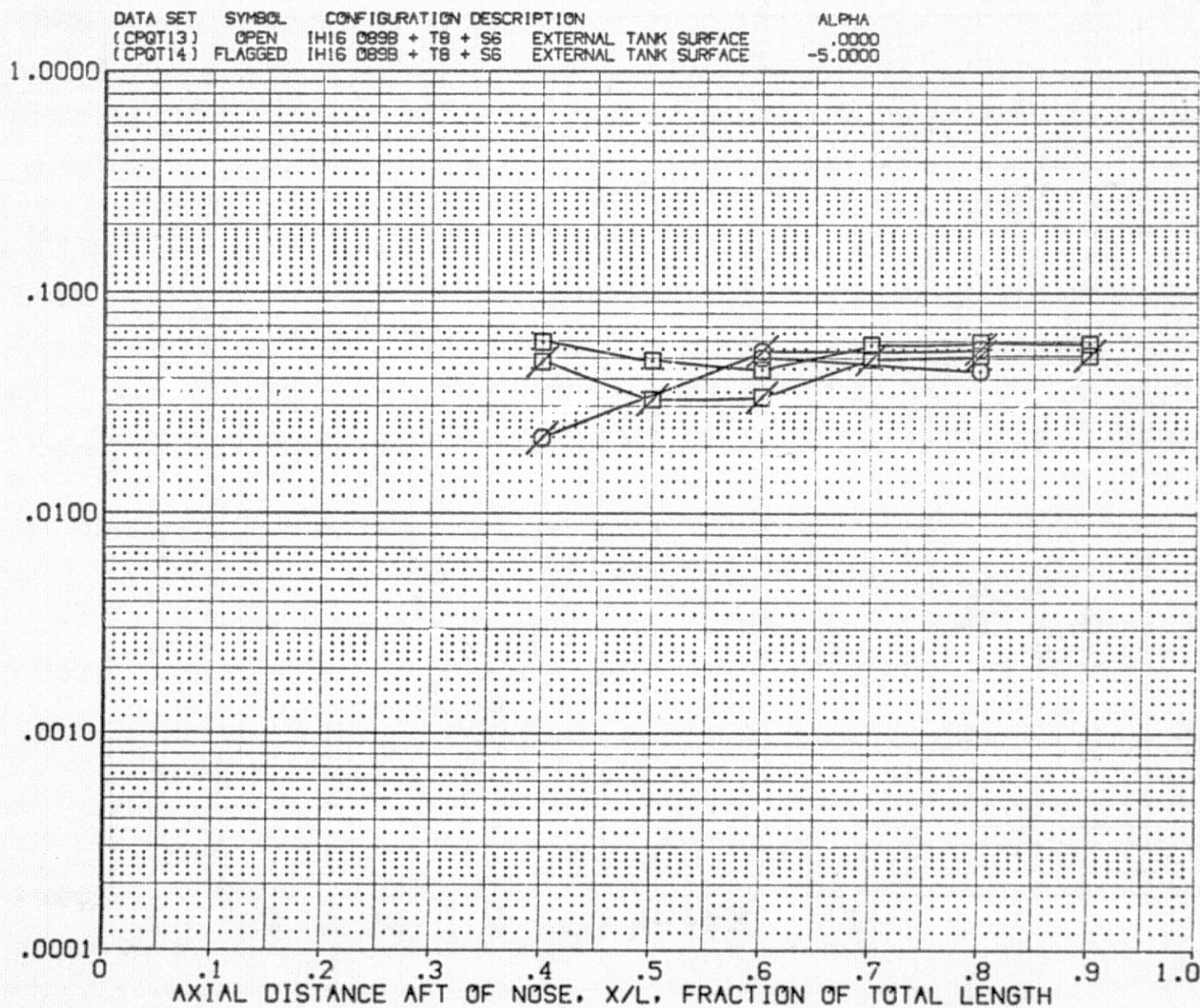


FIG. 31 INTEGRATED VEHICLE - ET SURFACE ALPHA VARIATION RN/FT = 5 DH = .069

SYMBOL PHI HAW/HT RN/L  
 ○ 67.500 .900 4.550  
 □ 90.000

PARAMETRIC VALUES  
 MACH 3.700 BETA .000  
 DELTAH .069

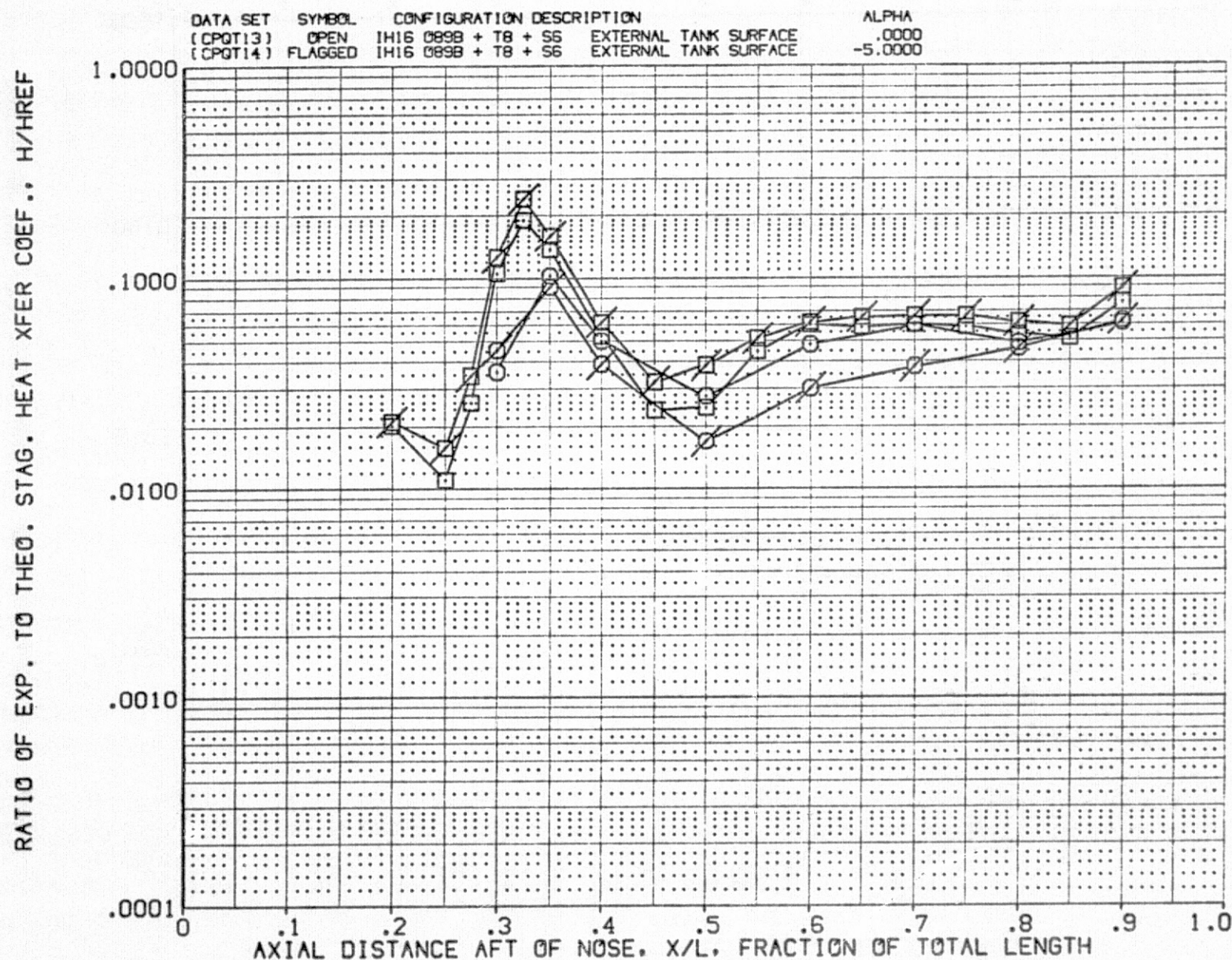


FIG. 31 INTEGRATED VEHICLE - ET SURFACE ALPHA VARIATION RN/FT = 5 DH = .069



SYMBOL PHI HAW/HT RN/L  
 ○ 112.500 .900 4.550  
 □ 135.000

PARAMETRIC VALUES  
 MACH 3.700 BETA .000  
 DELTAH .069

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

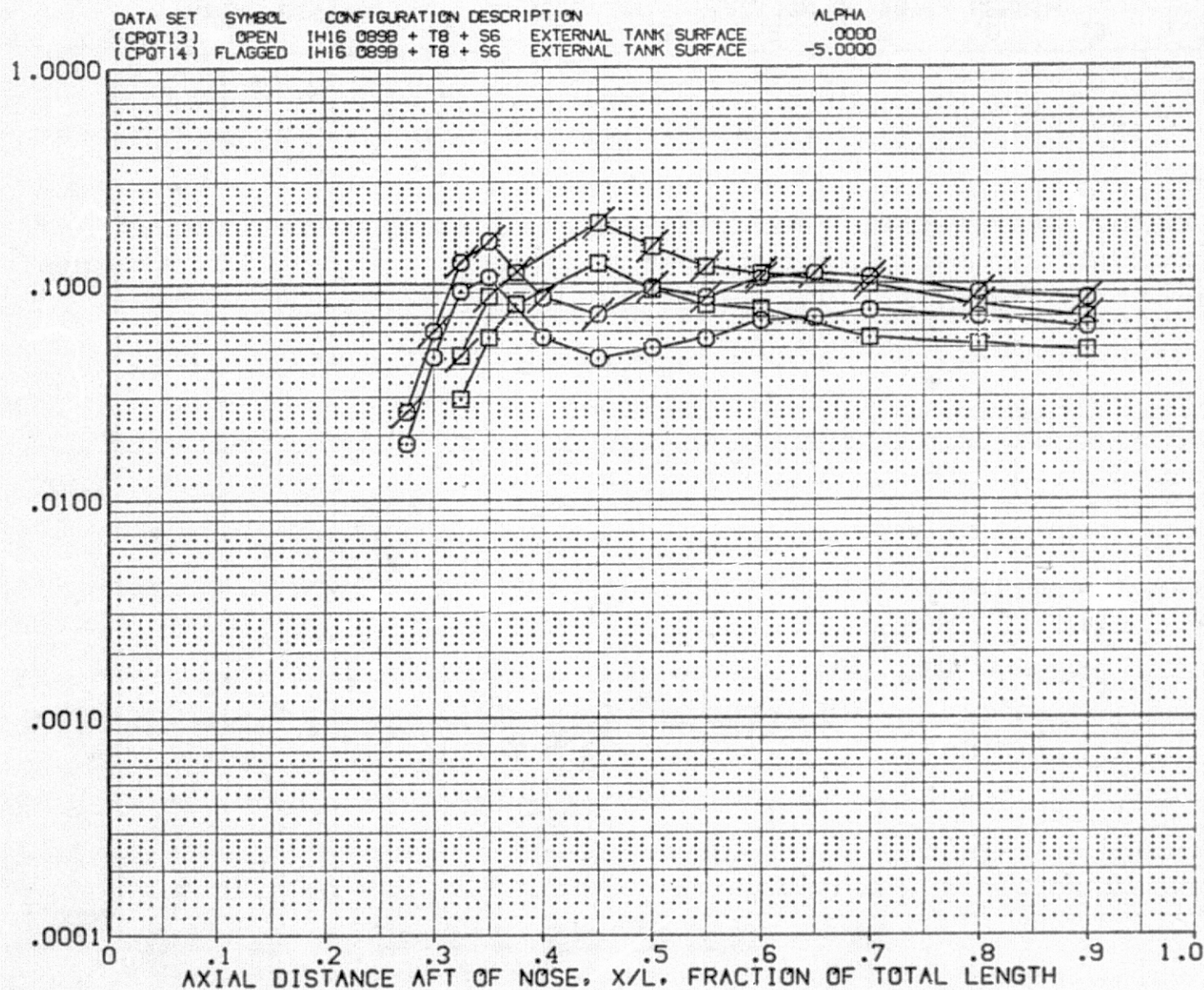


FIG. 31 INTEGRATED VEHICLE - ET SURFACE ALPHA VARIATION RN/FT = 5 DH = .069



SYMBOL PHI HAW/HT RN/L  
 ○ 157.500 .900 4.550  
 □ 180.000

PARAMETRIC VALUES  
 MACH 3.700 BETA .000  
 DELTAH .069

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

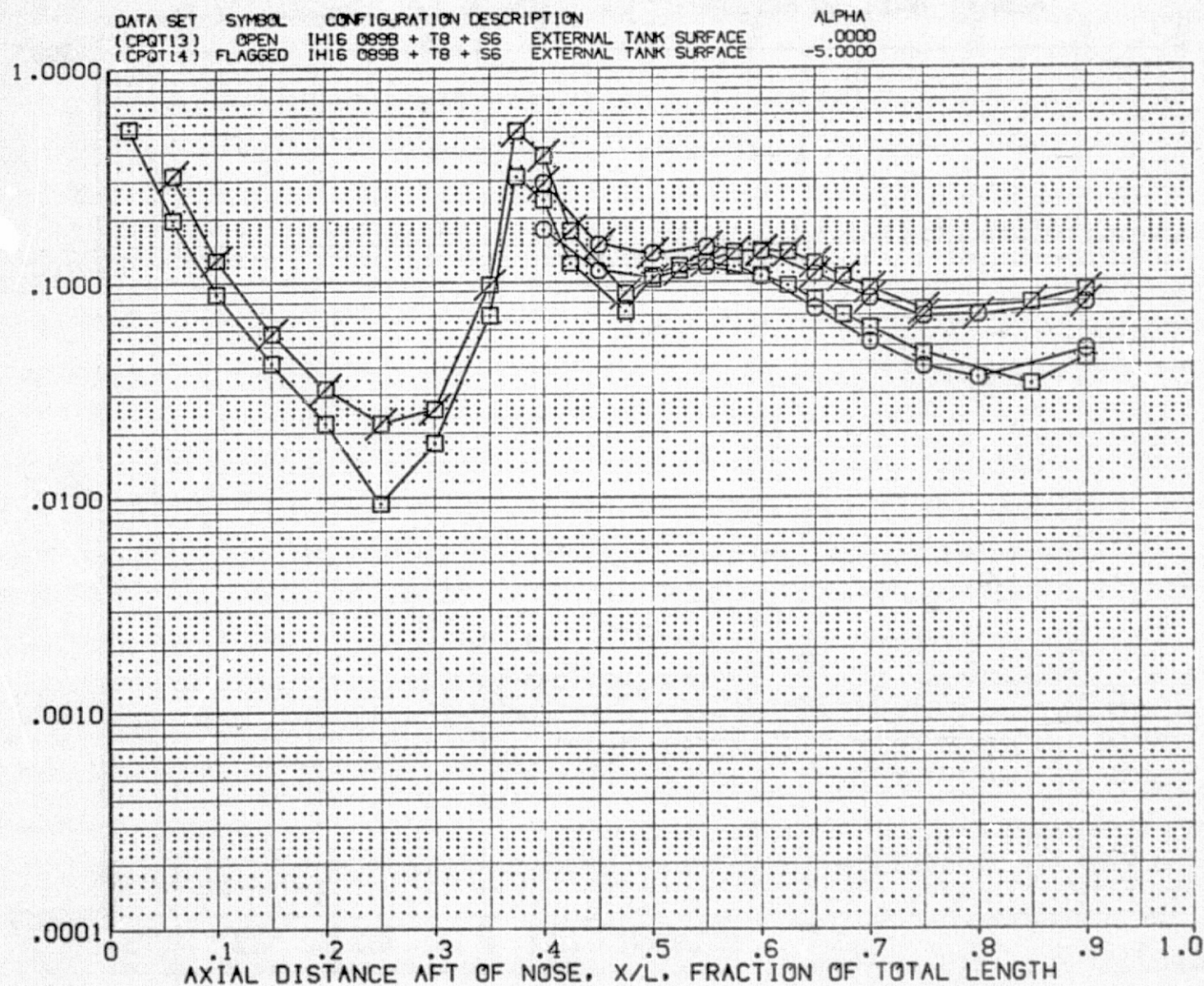


FIG. 31 INTEGRATED VEHICLE - ET SURFACE ALPHA VARIATION RN/FT = 5 DH = .069



SYMBOL PHI HAW/HT RN/L  
 ○ .000 .900 1.940  
 □ 45.000

PARAMETRIC VALUES  
 MACH 3.700 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

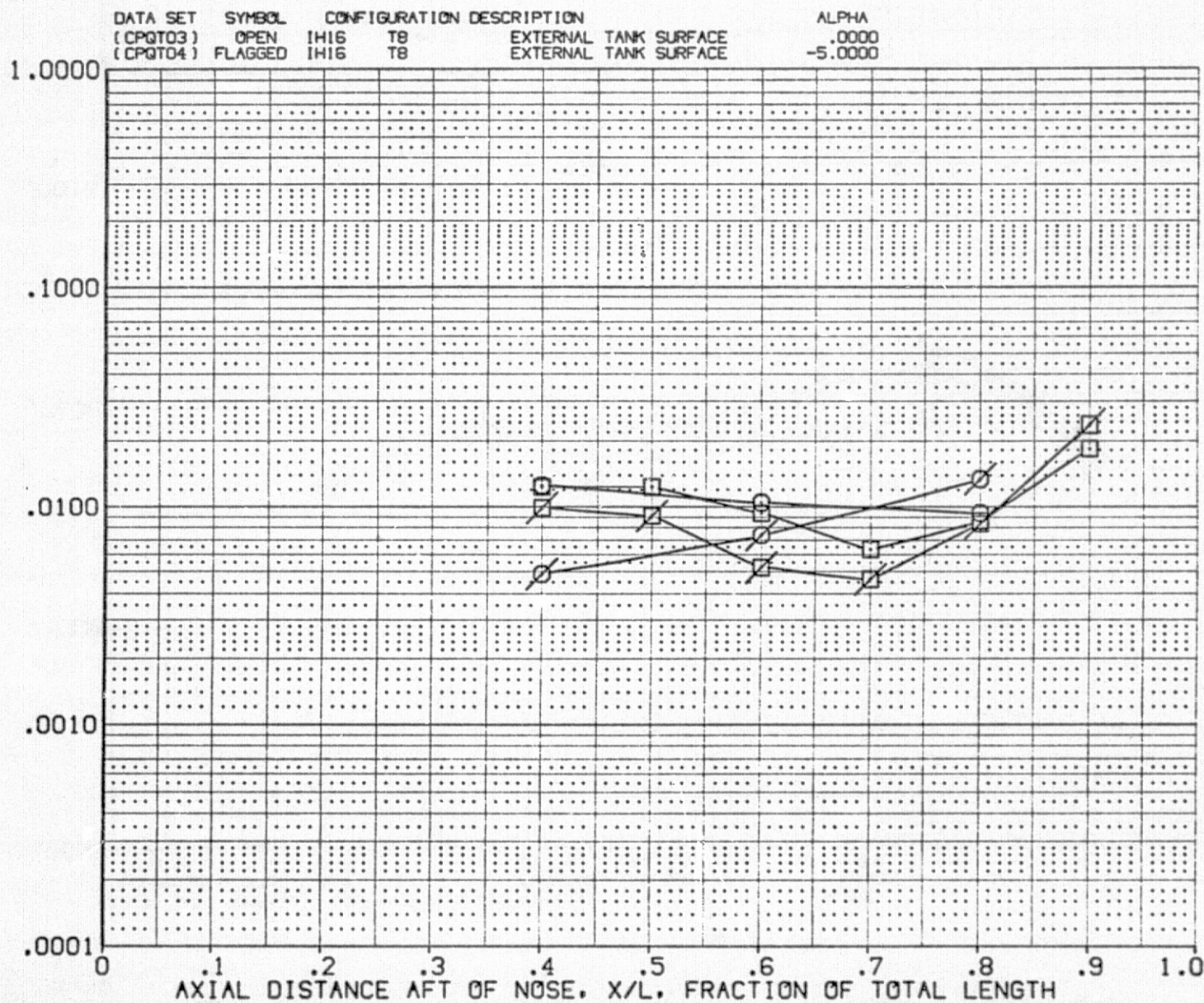


FIG. 32 ET ALONE

RN/FT = 2

SYMBOL PHI HAV/HT RN/L  
 O 67.500  
 □ 90.000

PARAMETRIC VALUES  
 MACH 3.700 BETA .000

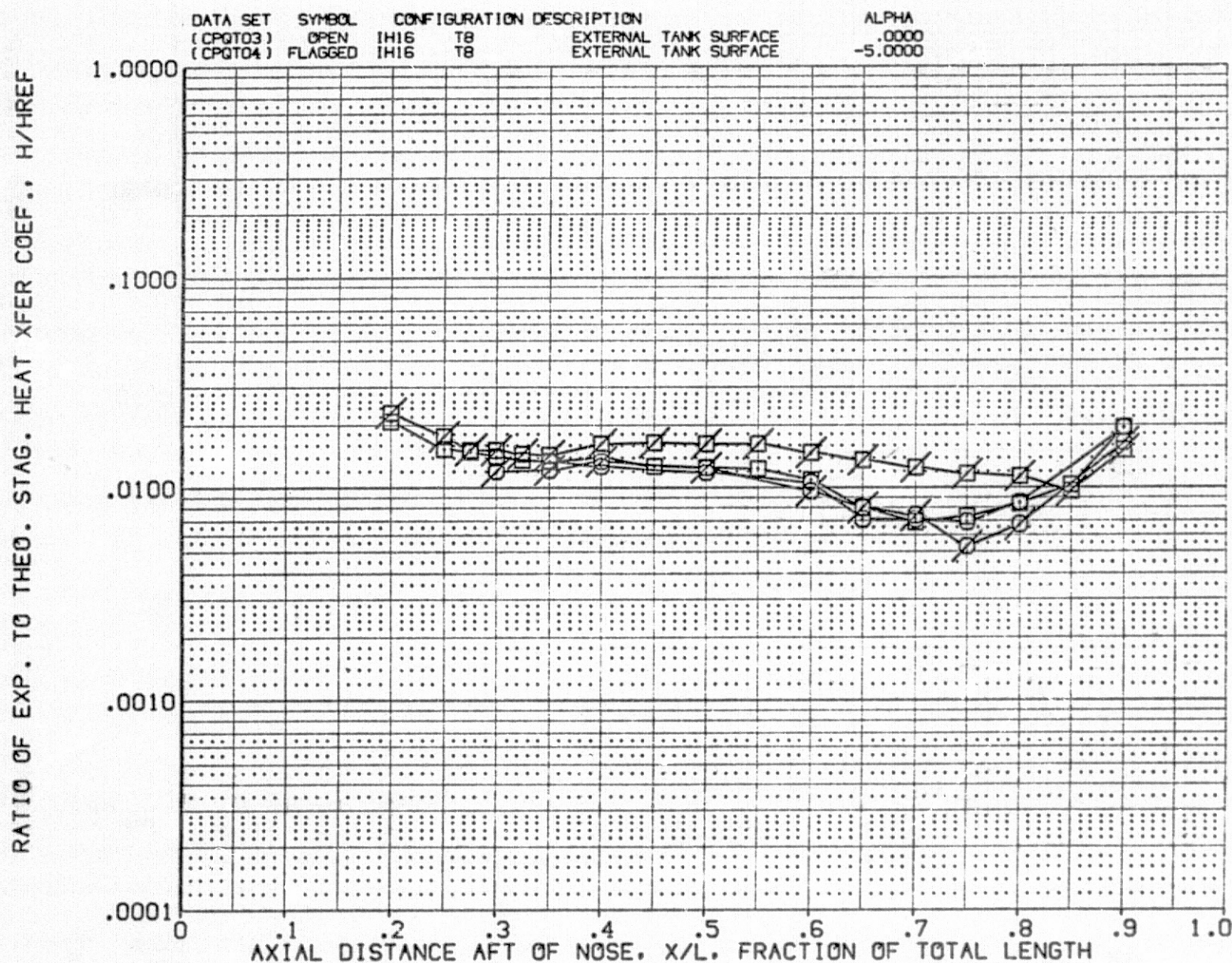


FIG. 32 ET ALONE

RN/FT = 2



SYMBOL PHI HAW/HT RN/L  
 O 112.500 .900 1.940  
 □ 135.000

PARAMETRIC VALUES  
 MACH 3.700 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

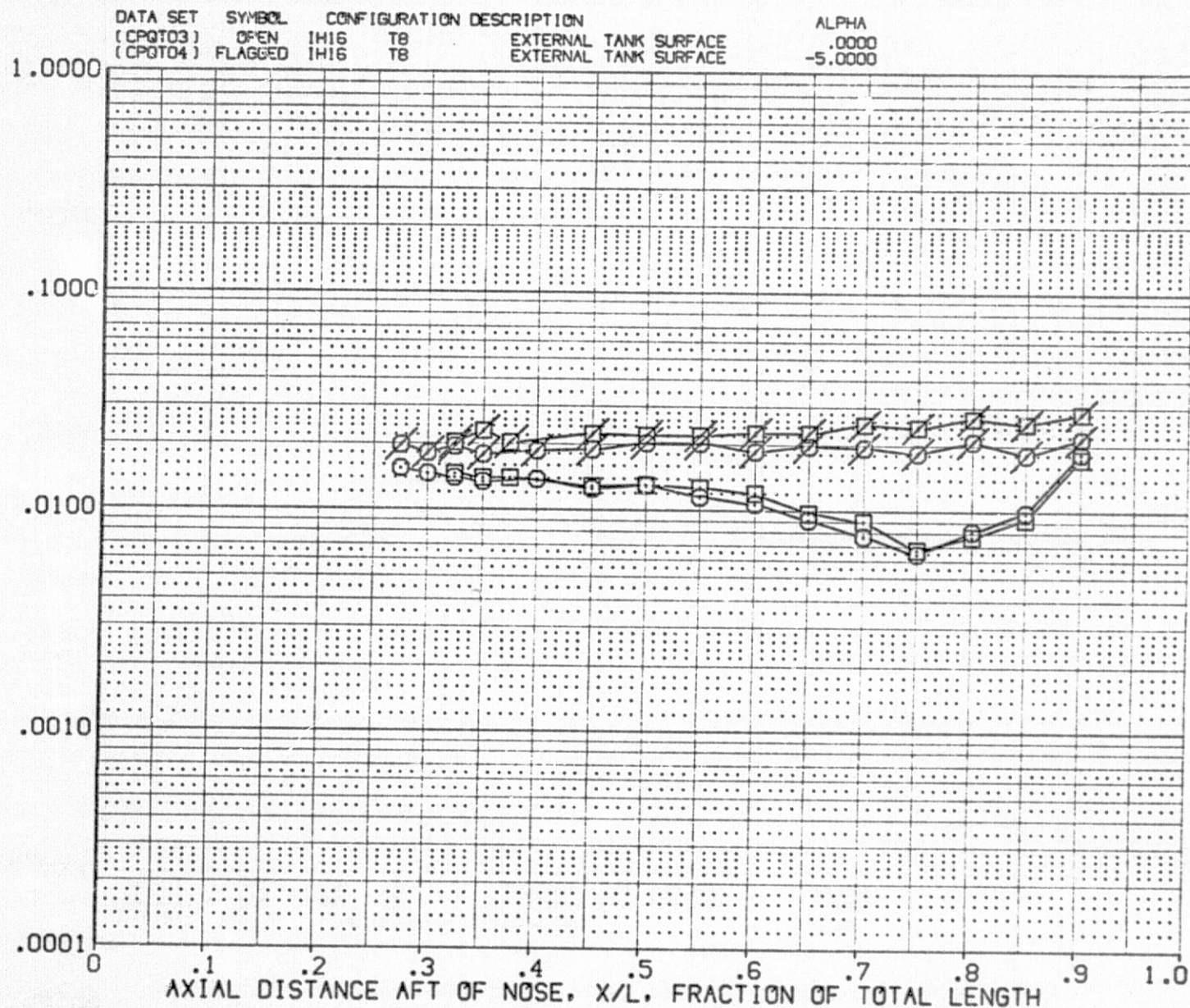


FIG. 32 ET ALONE

RN/FT = 2

SYMBOL PHI HAV/HT RN/L  
 ○ 157.500 .900 1.940  
 □ 180.000

PARAMETRIC VALUES  
 MACH 3.700 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

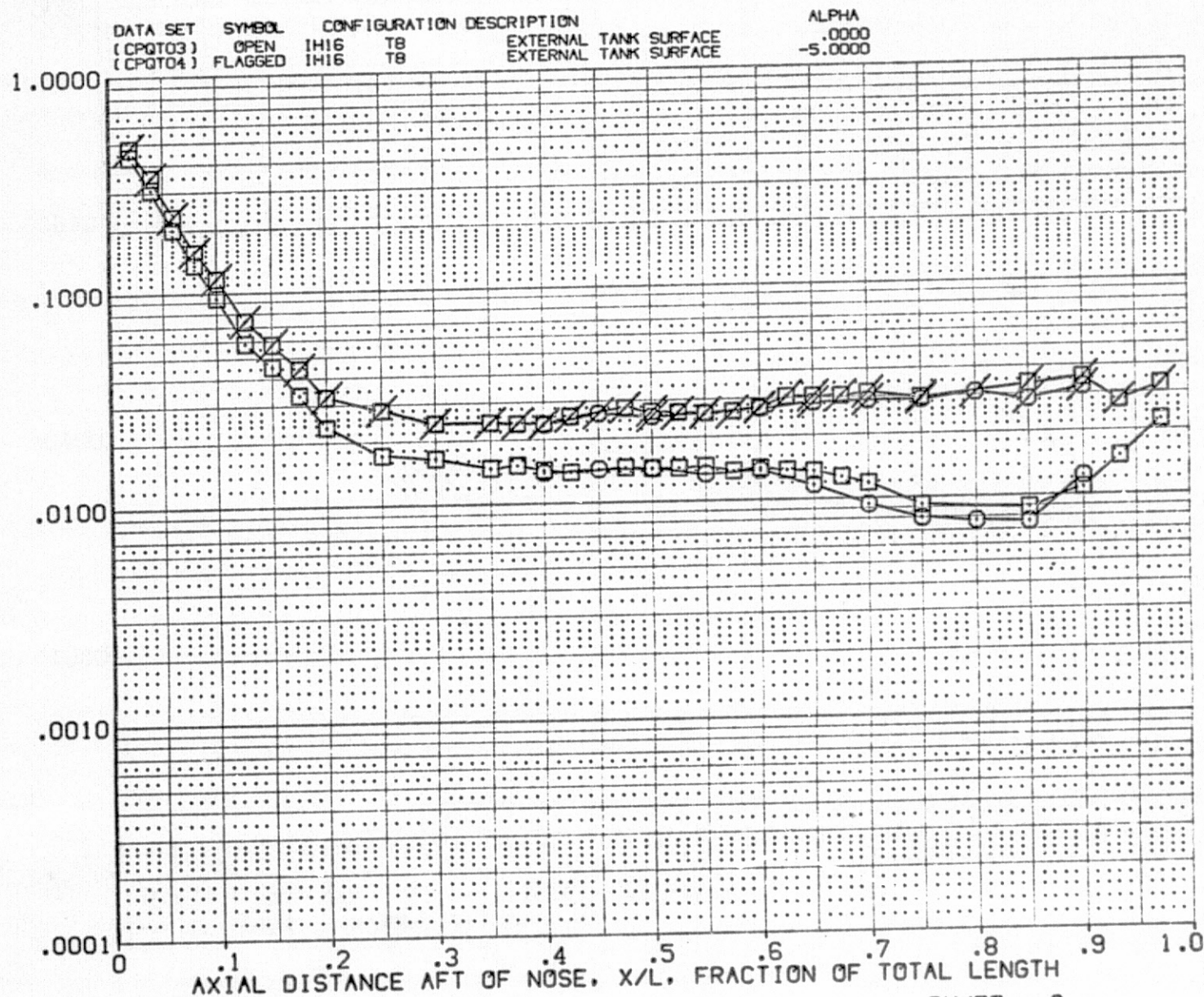


FIG. 32 ET ALONE

RN/FT = 2



SYMBOL  $\Phi$  PHI HAV/HT RN/L  
 $\square$  45.000

MACH 3.700 BETA .000  
 PARAMETRIC VALUES

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $H/H_{REF}$

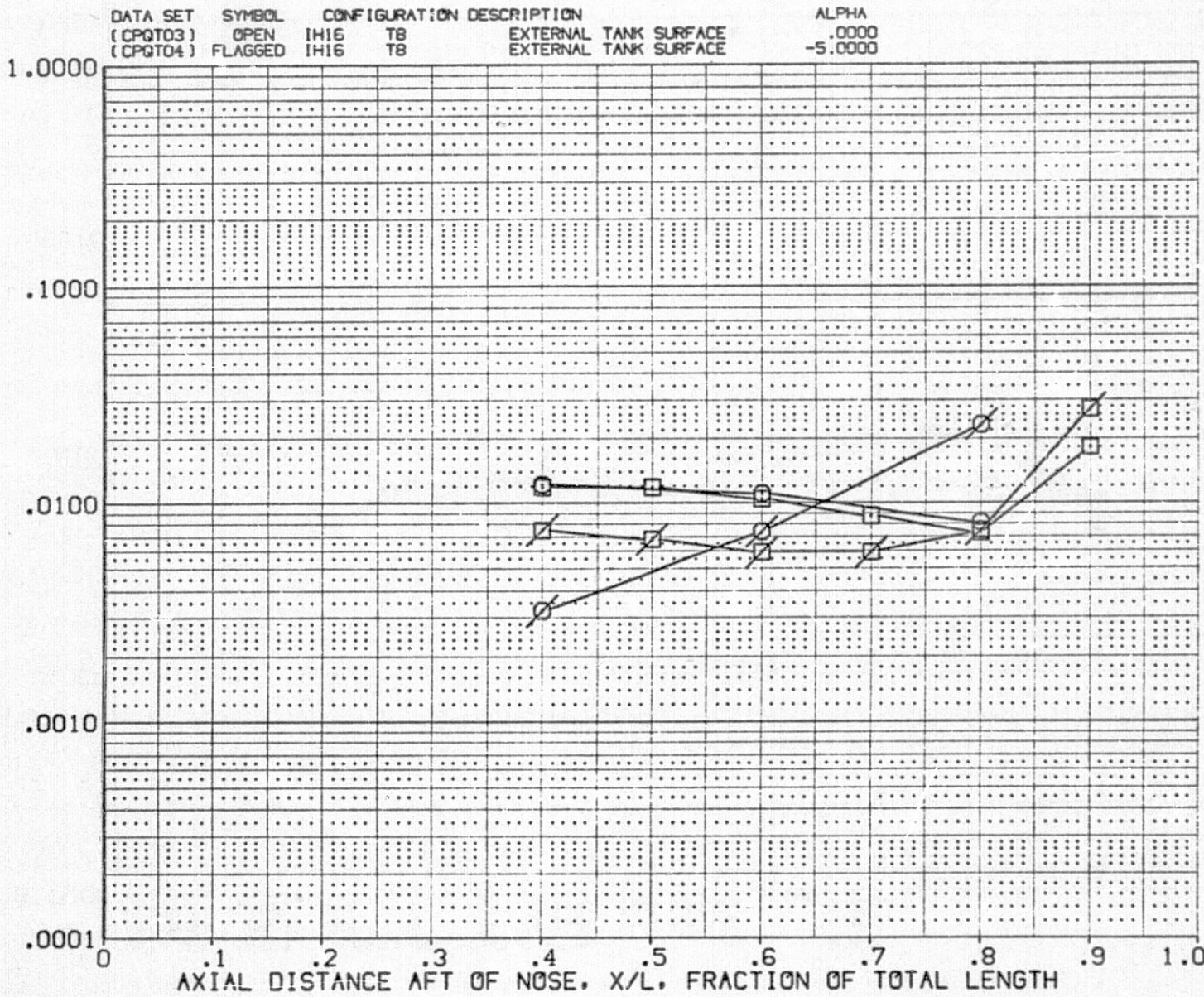


FIG. 33 ET ALONE

RN/FT = 5



SYMBOL PHI HAW/HT RN/L  
 ○ 67.500 .900 4.640  
 □ 90.000

MACH PARAMETRIC VALUES  
 3.700 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.  $H/H_{REF}$

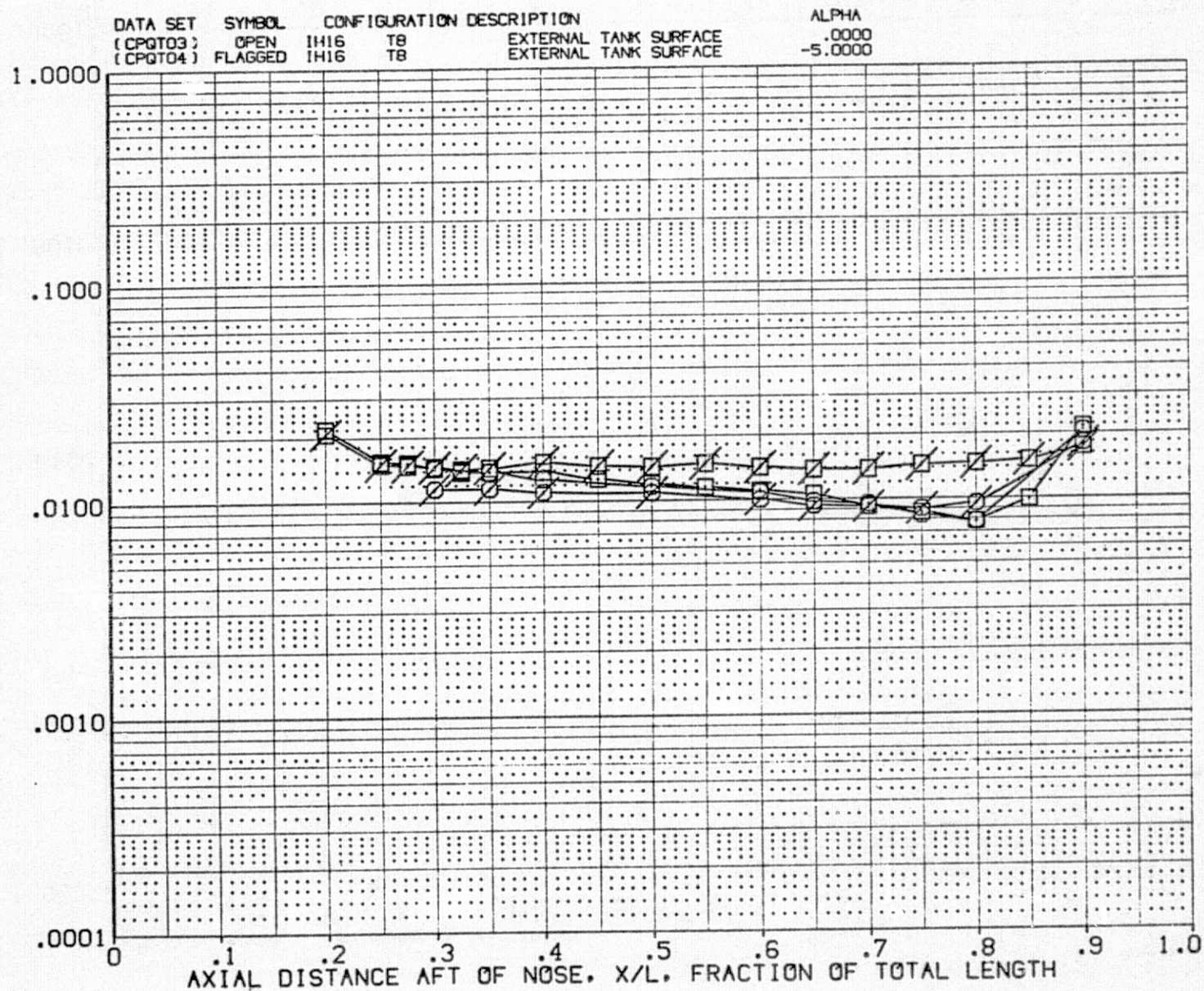


FIG. 33 ET ALONE

RN/FT = 5



SYMBOL PHI HAW/HT RN/L  
 ○ 112.500 .900 4.640  
 □ 135.000

PARAMETRIC VALUES  
 MACH 3.700 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $H/H_{REF}$

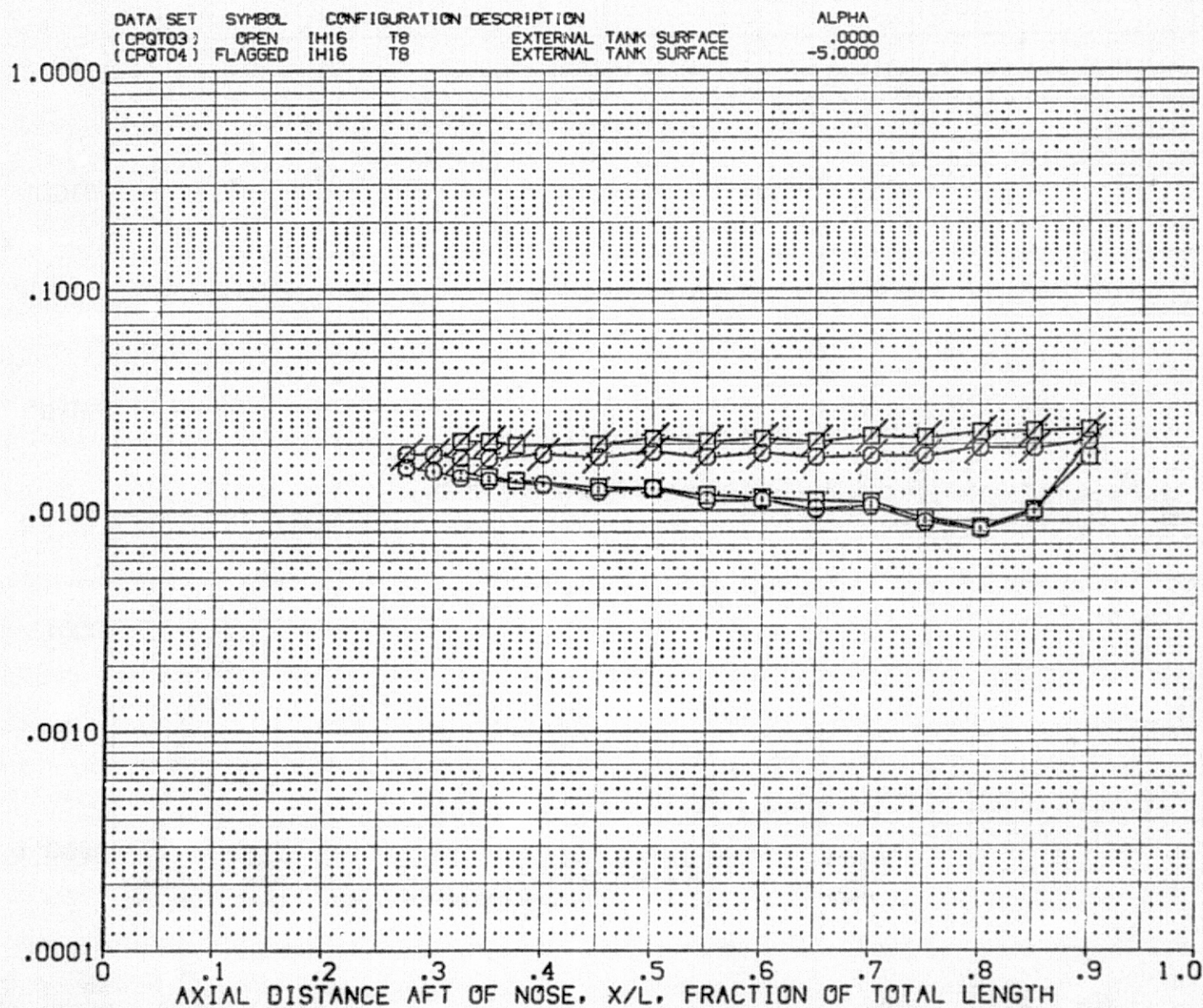


FIG. 33 ET ALONE

RN/FT = 5

SYMBOL PHI HAV/HT RN/L  
 O 157.500 .900 4.640  
 □ 180.000

PARAMETRIC VALUES  
 MACH 3.700 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $H/H_{REF}$

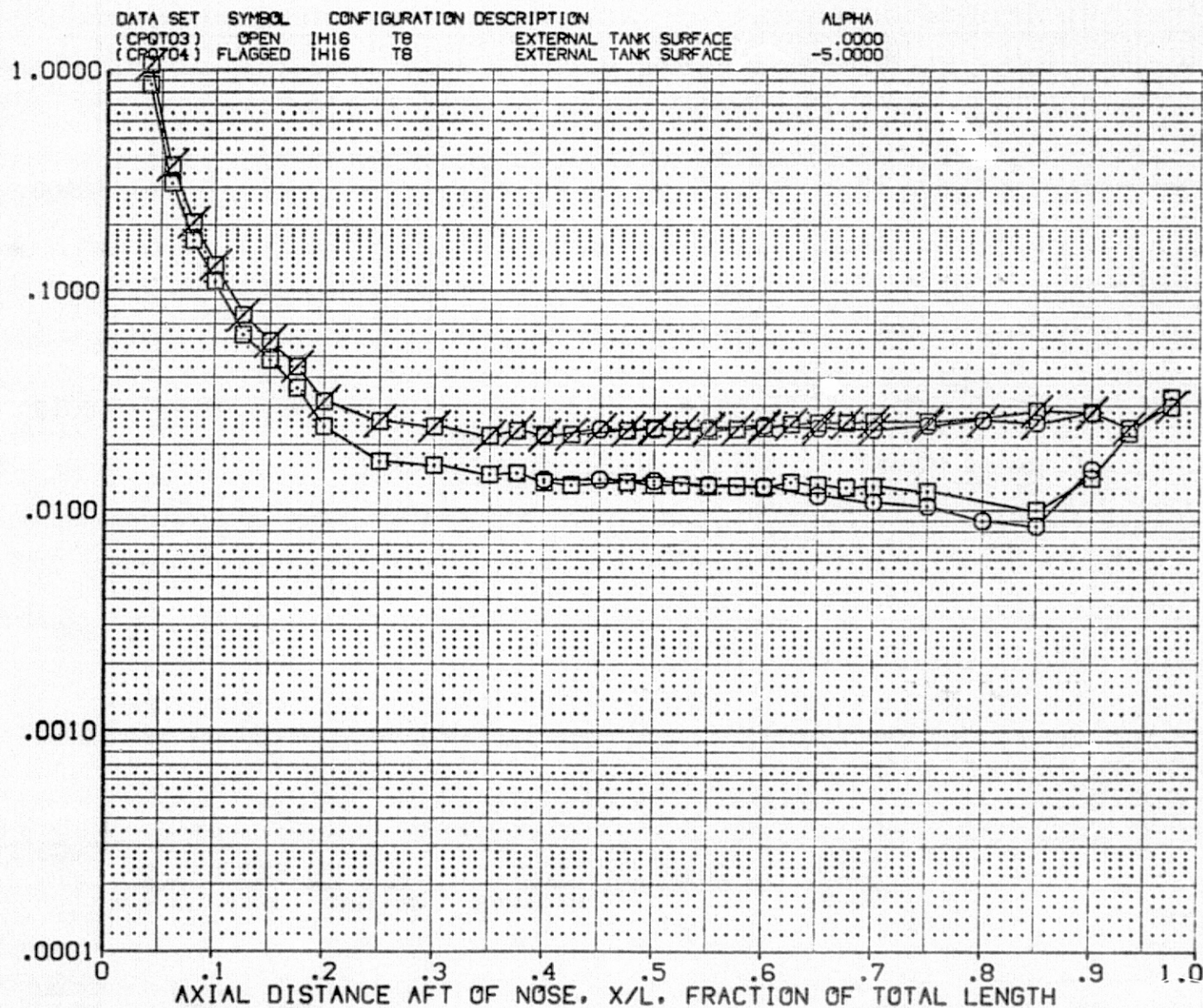


FIG. 33 ET ALONE

RN/FT = 5



SYMBOL PHI HAW/HT RN/L  
 O .000 .850 1.930  
 □ 45.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000 DELTAH .175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF. H/HREF

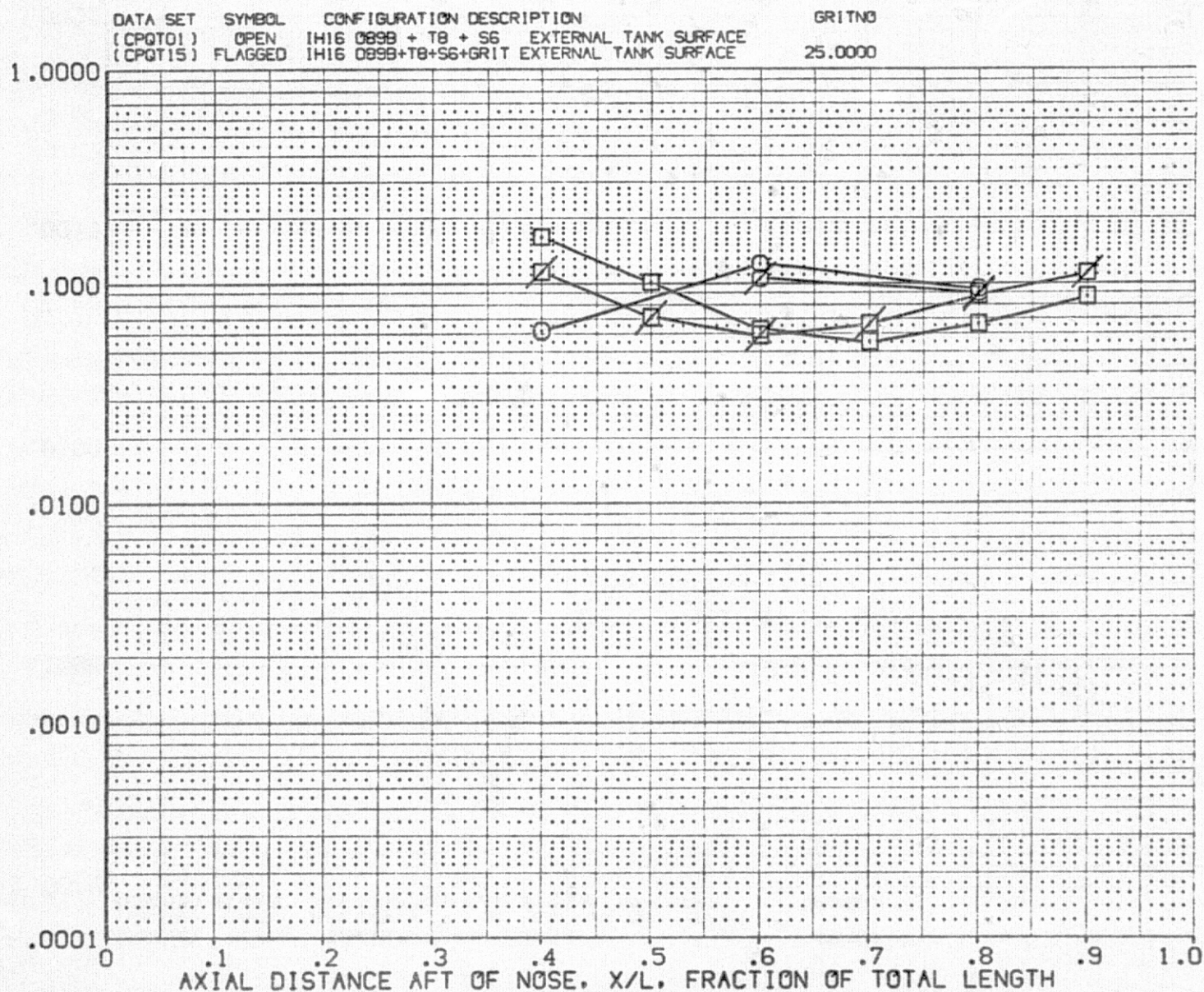


FIG. 34 INTEGRATED VEHICLE - ET SURFACE GRIT EFFECT

SYMBOL PHI HAW/HT RN/L  
 ○ 67.500 .850 1.930  
 □ 90.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000 DELTAH .175

DATA SET SYMBOL CONFIGURATION DESCRIPTION GRITNO  
 (CPQT01) OPEN IH16 089B + T8 + S6 EXTERNAL TANK SURFACE  
 (CPQT15) FLAGGED IH16 089B+T8+S6+GRIT EXTERNAL TANK SURFACE 25.0000

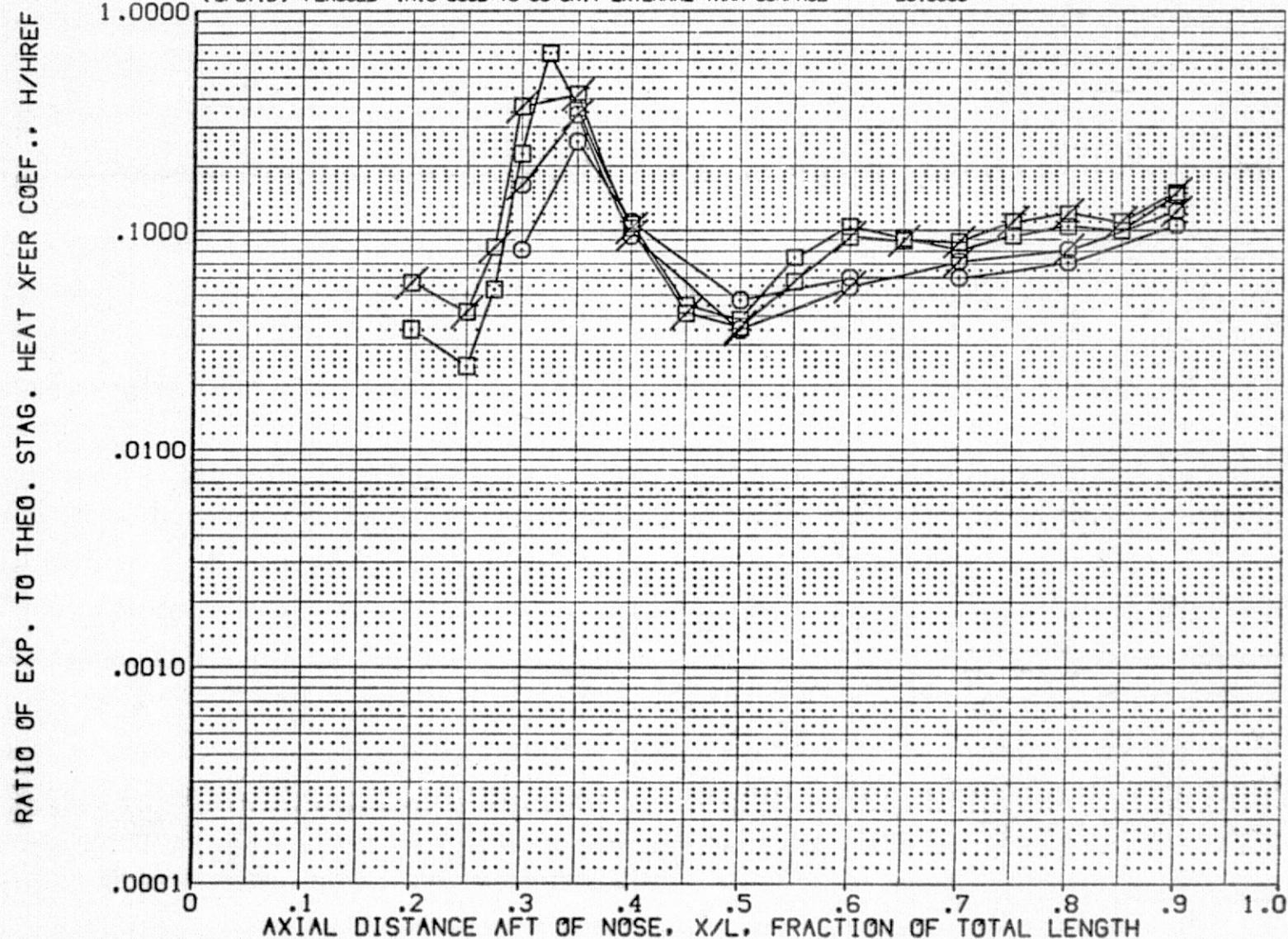


FIG. 34 INTEGRATED VEHICLE - ET SURFACE GRIT EFFECT



SYMBOL	FHI	HAW/HT	RN/L
○	112.500	.850	1.930
□	135.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

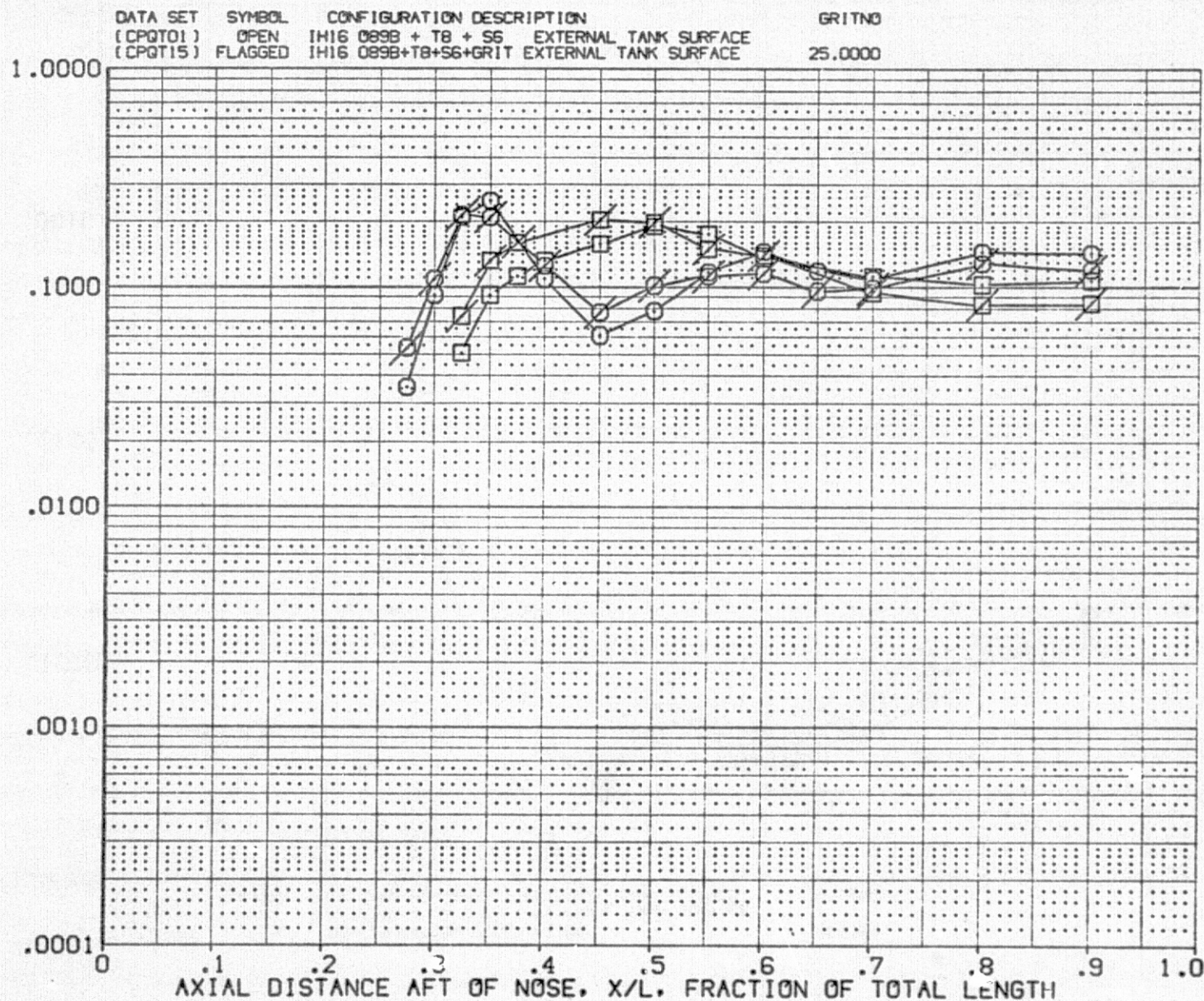


FIG. 34 INTEGRATED VEHICLE - ET SURFACE GRIT EFFECT



SYMBOL	PHI	HAW/HT	RN/L
○	157.500	.850	1.930
□	180.000		

		PARAMETRIC VALUES	
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

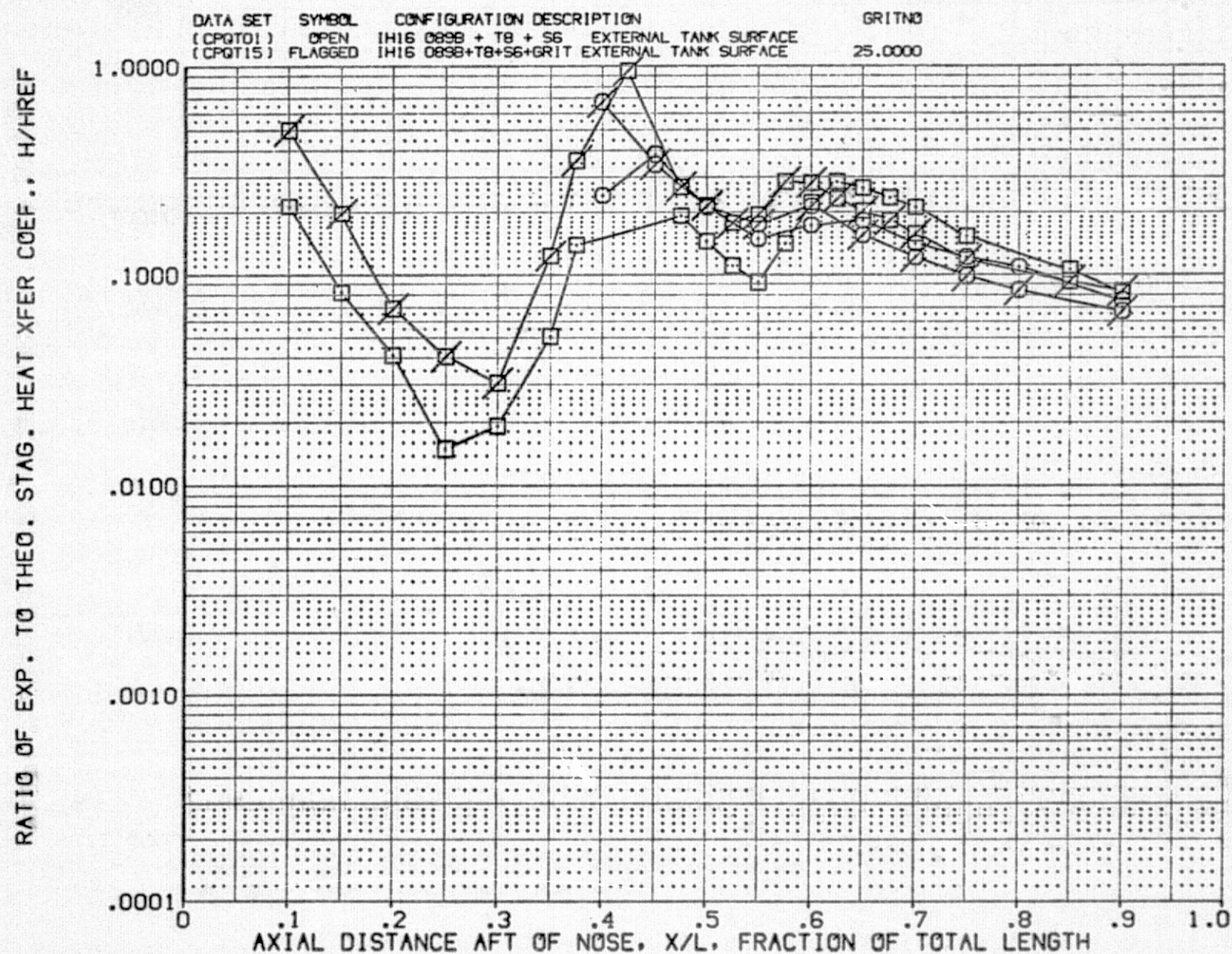


FIG. 34 INTEGRATED VEHICLE - ET SURFACE GRIT EFFECT



SYMBOL PHI HAV/HT RN/L  
 ○ .000 .900 1.930  
 □ 45.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000 DELTAH .175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

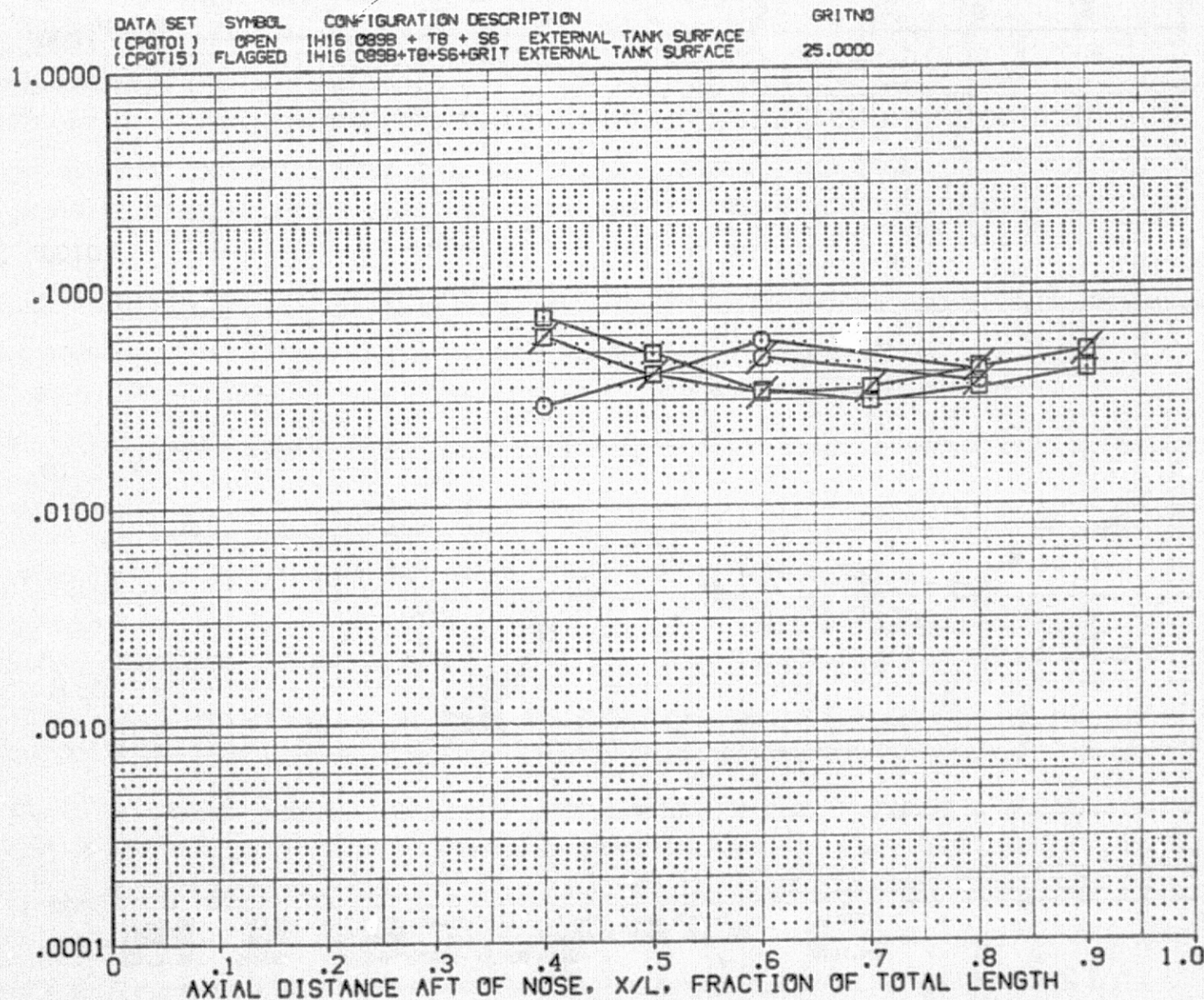


FIG. 34 INTEGRATED VEHICLE - ET SURFACE GRIT EFFECT



SYMBOL	PHI	HAV/HT	RN/L
○	67.500	.900	1.930
□	90.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

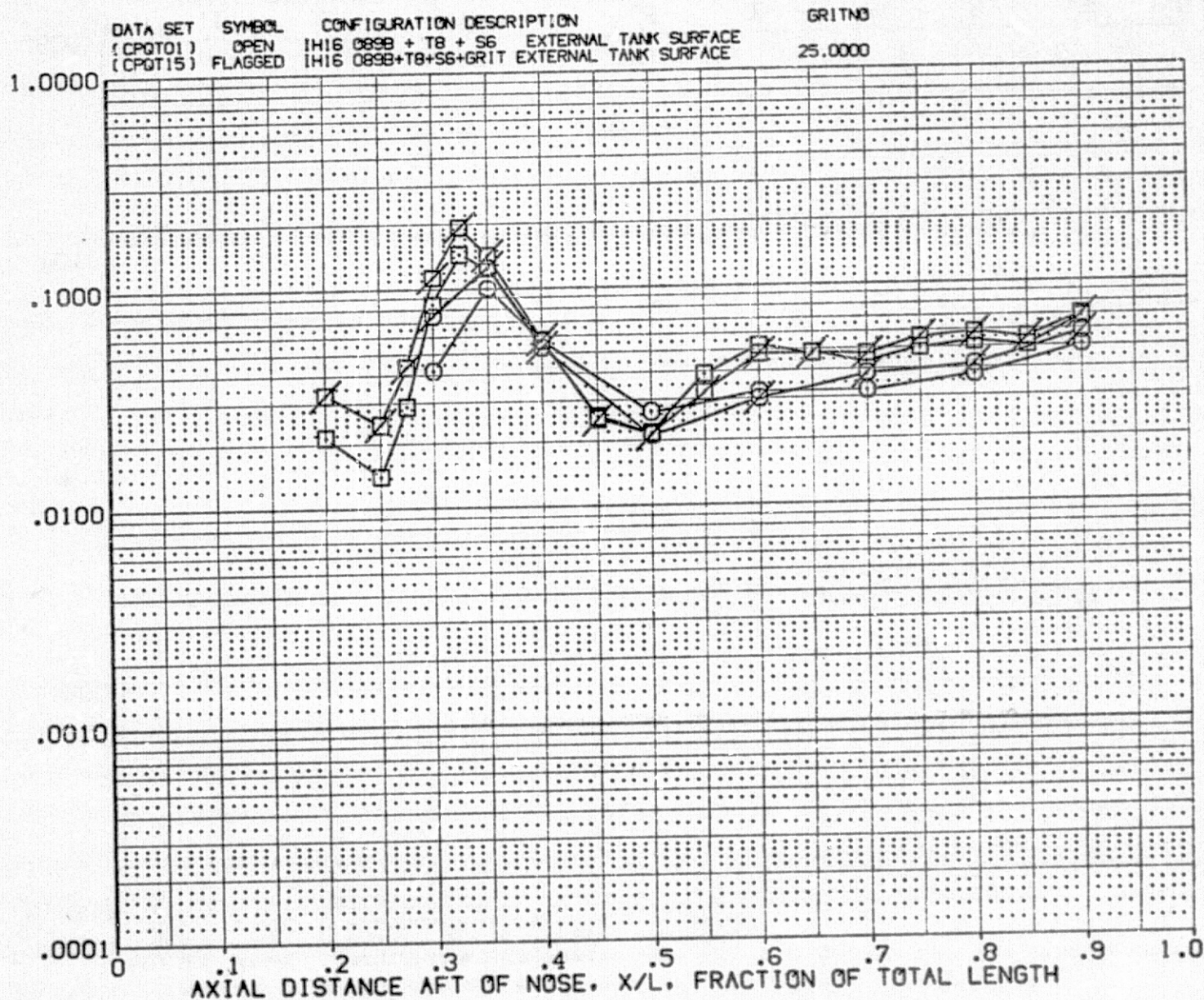


FIG. 34 INTEGRATED VEHICLE - ET SURFACE GRIT EFFECT



SYMBOL	PHI	HAW/HT	RN/L
○	112.500	.900	1.930
□	135.000		

		PARAMETRIC VALUES	
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

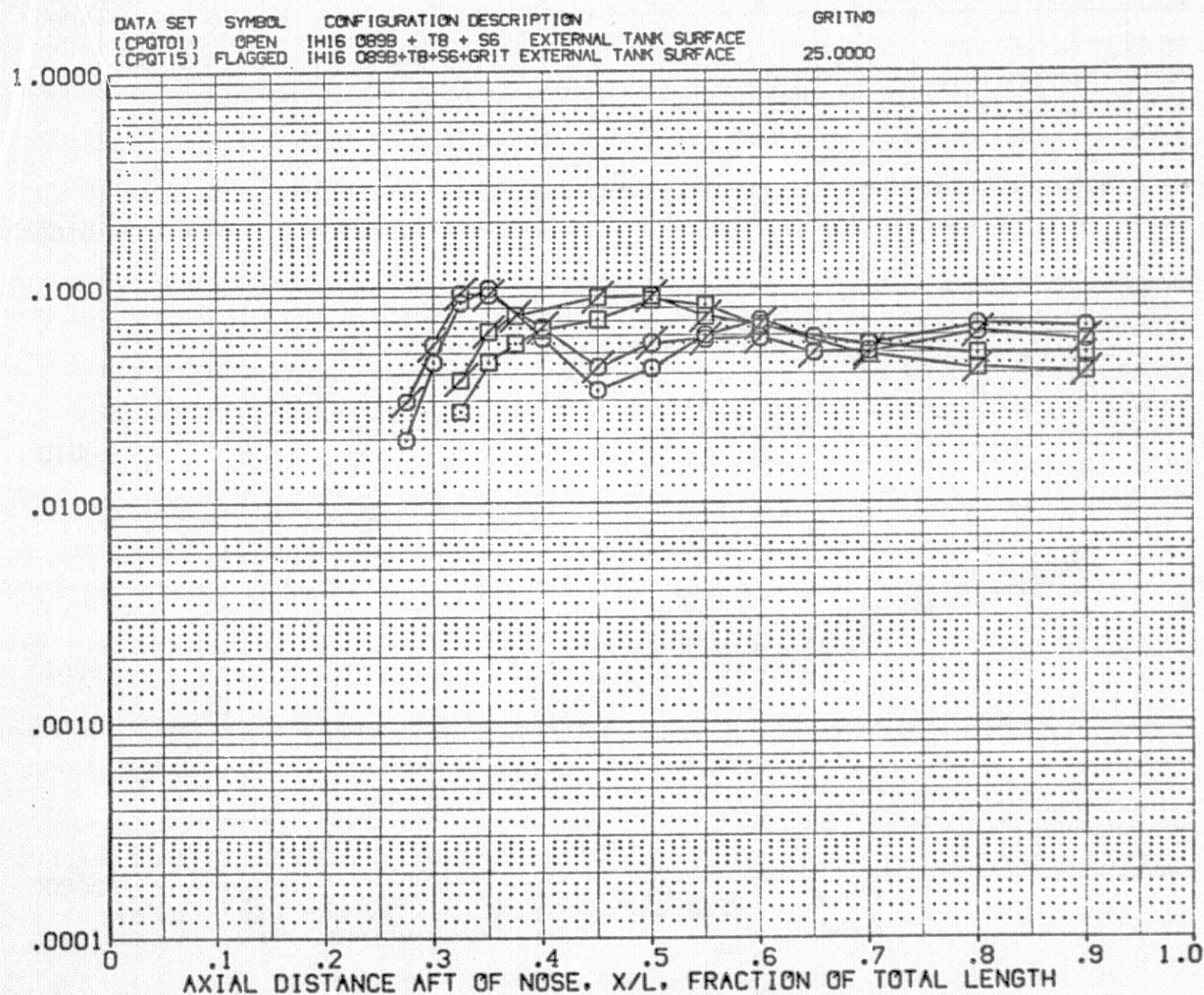


FIG. 34 INTEGRATED VEHICLE - ET SURFACE GRIT EFFECT



SYMBOL	PHI	HAW/HT	RN/L
○	157.500	.900	1.930
□	180.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

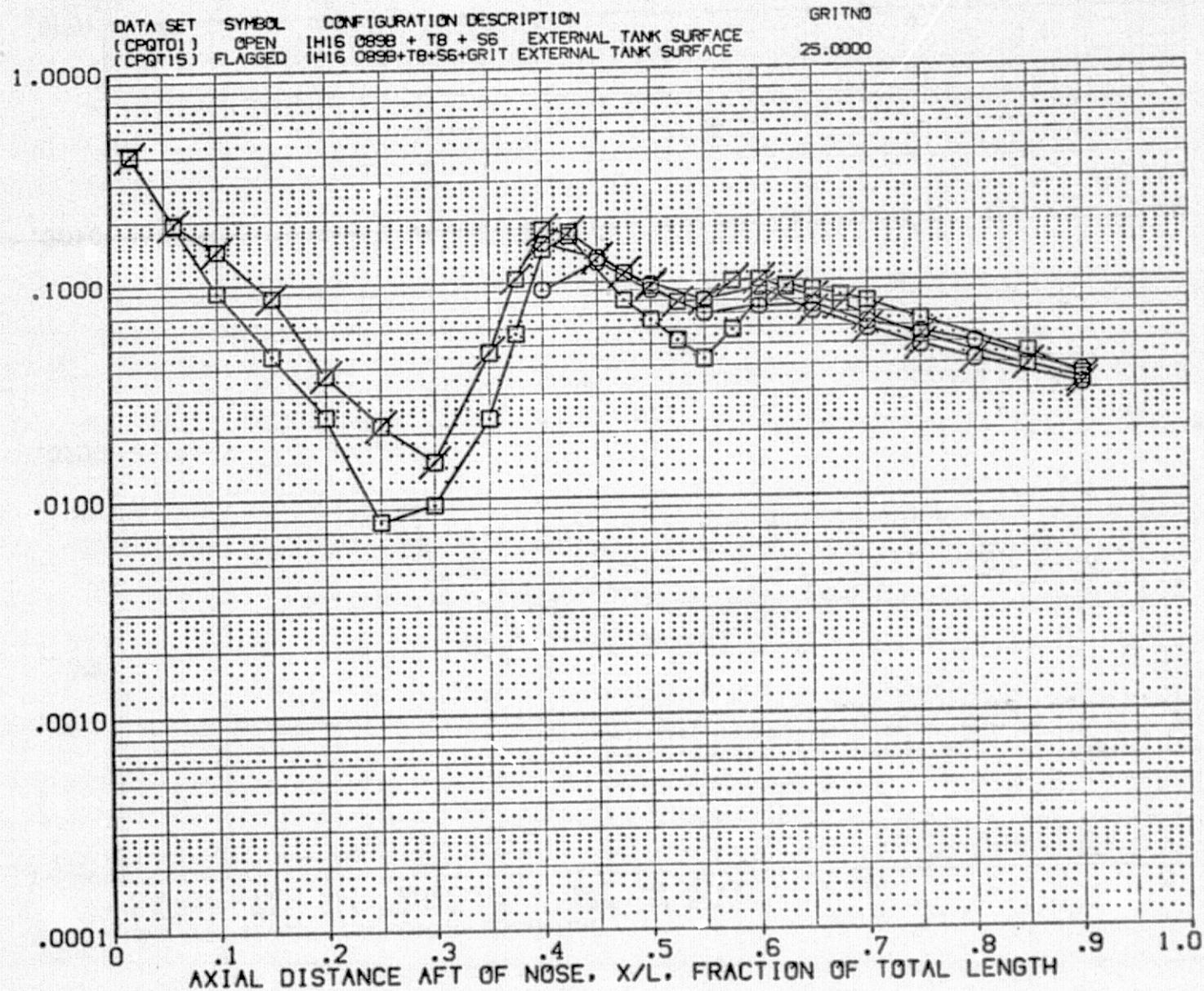


FIG. 34 INTEGRATED VEHICLE - ET SURFACE GRIT EFFECT



SYMBOL	PHI	HAW/HT	RN/L
○	.000	1.000	1.930
□	45.000		

		PARAMETRIC VALUES	
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

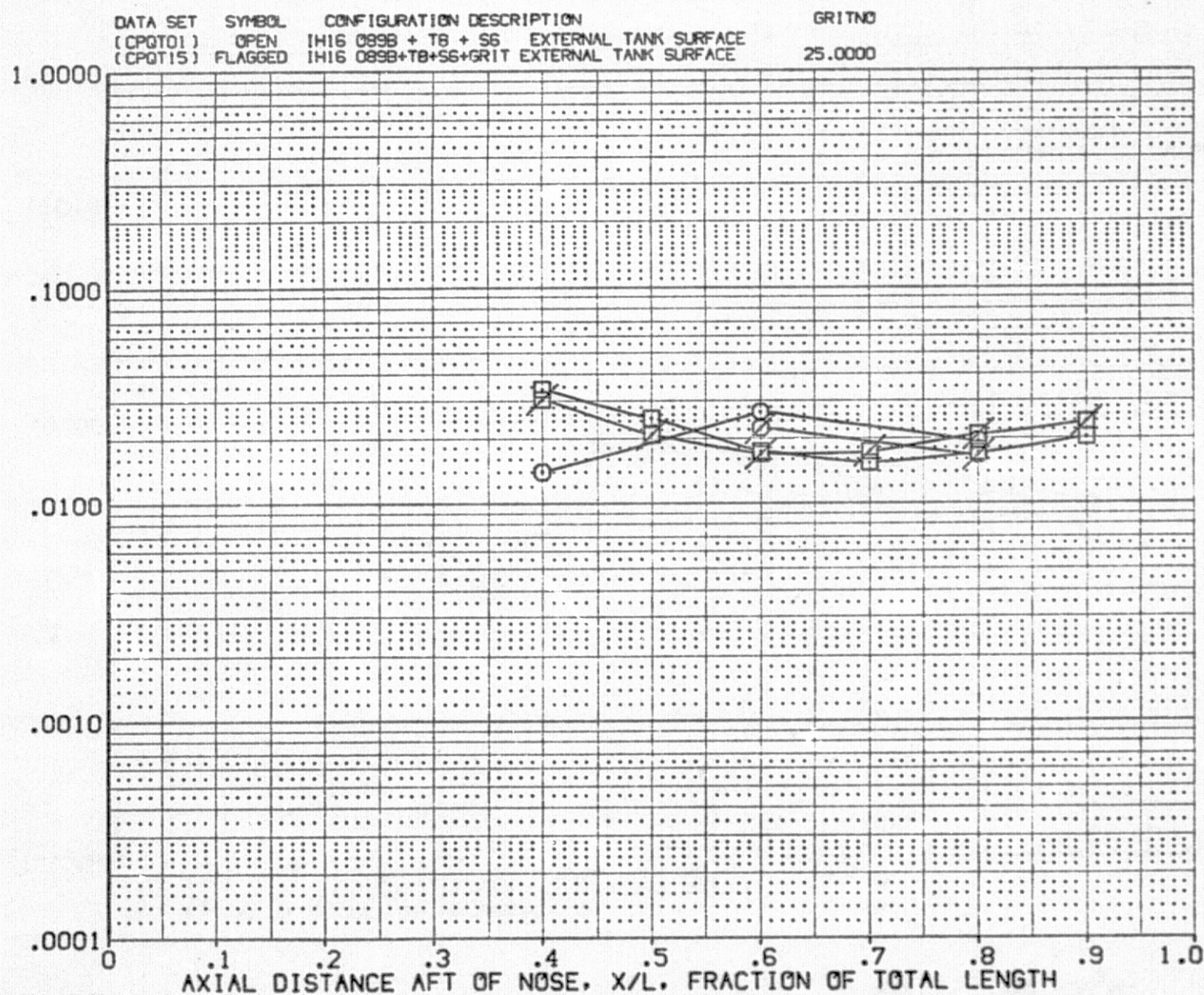


FIG. 34 INTEGRATED VEHICLE - ET SURFACE GRIT EFFECT

SYMBOL	PHI	HAW/HT	RN/L
○	67.500	1.000	1.930
□	90.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

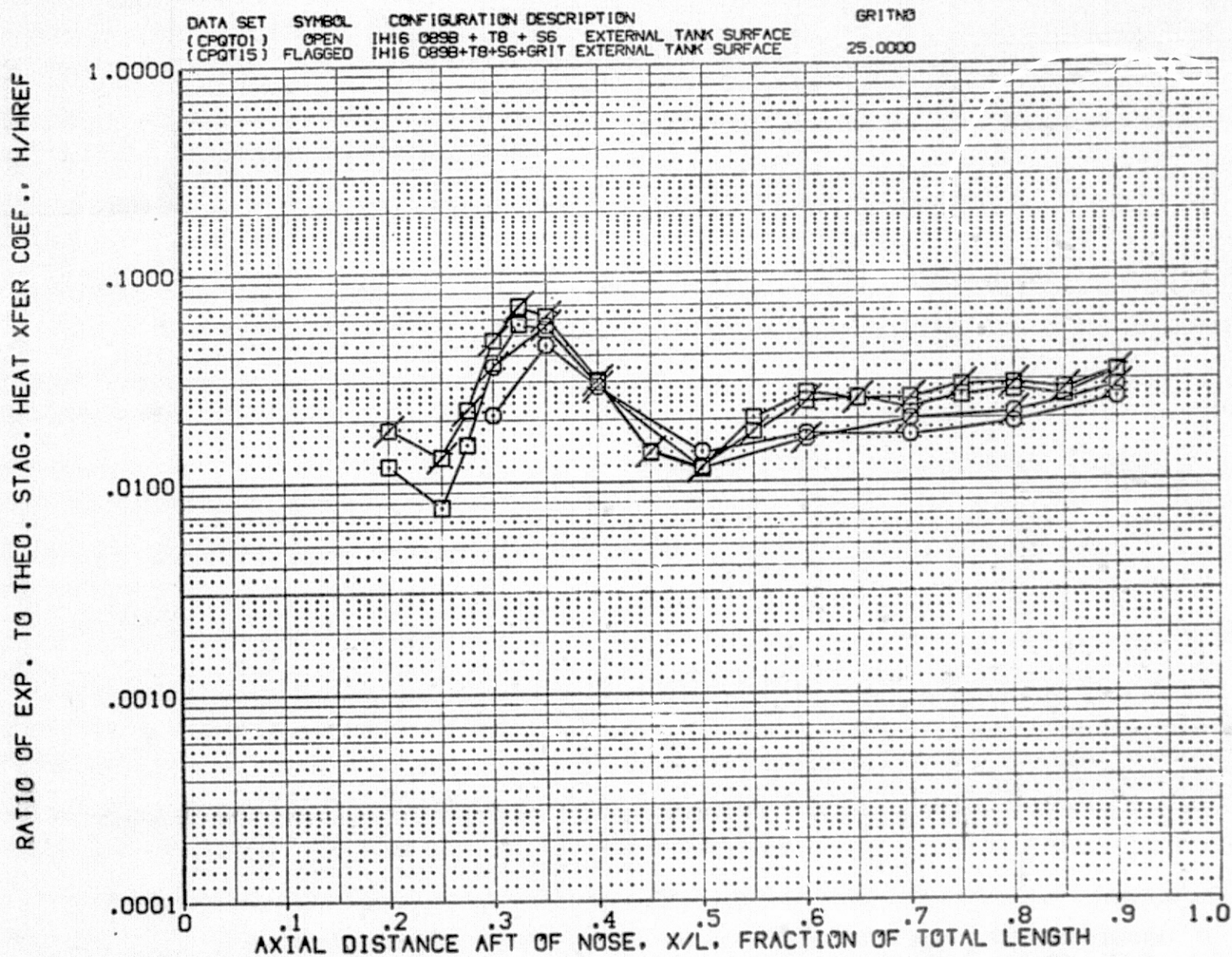


FIG. 34 INTEGRATED VEHICLE - ET SURFACE GRIT EFFECT



SYMBOL PHI HAW/HT RN/L  
 ○ 112.500 1.000 1.930  
 □ 135.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000 DELTAH .175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $H/H_{REF}$

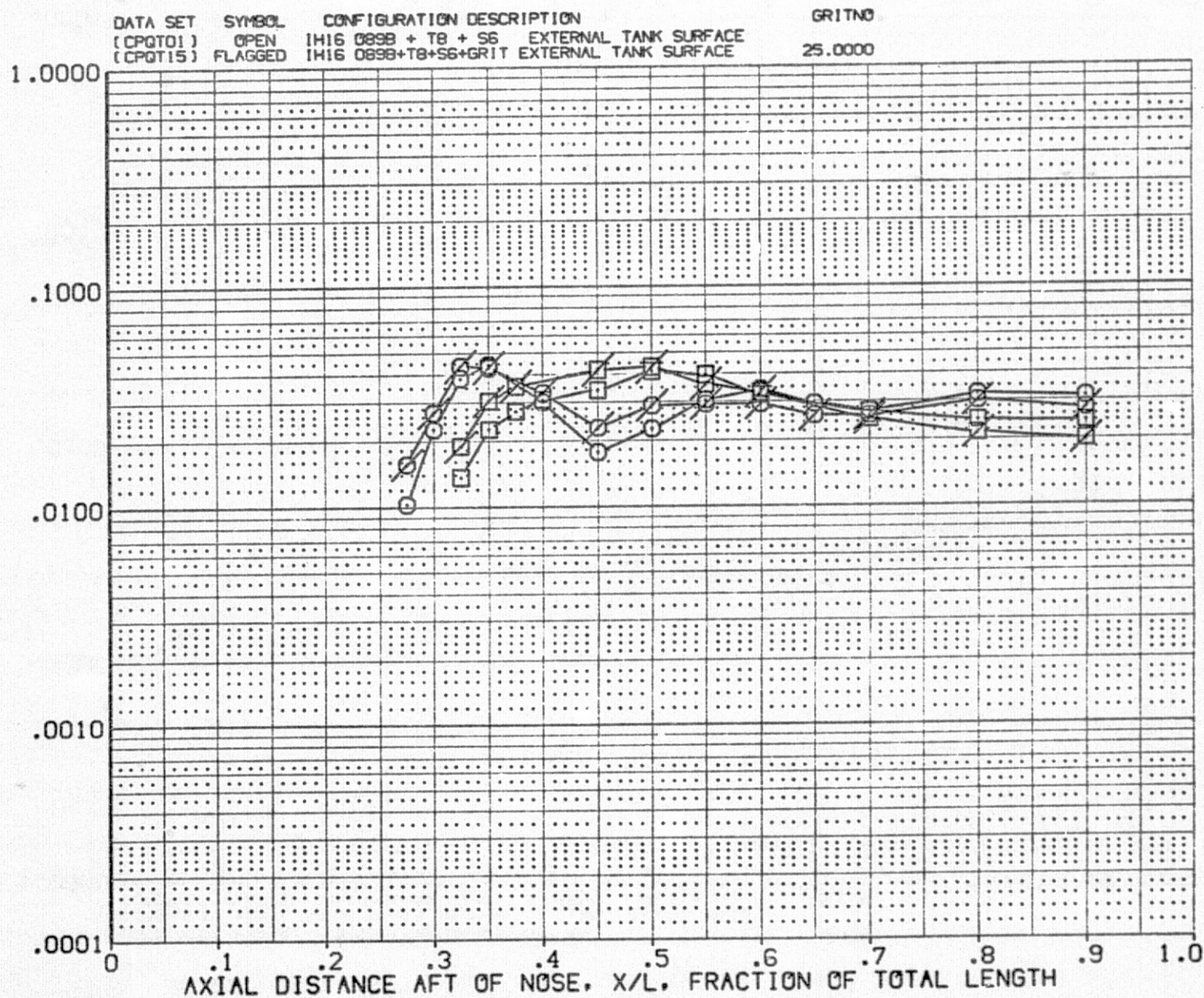


FIG. 34 INTEGRATED VEHICLE - ET SURFACE GRIT EFFECT



SYMBOL	PHI	HAW/HT	RN/L
○	157.500	1.000	1.930
□	180.000		

		PARAMETRIC VALUES	
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

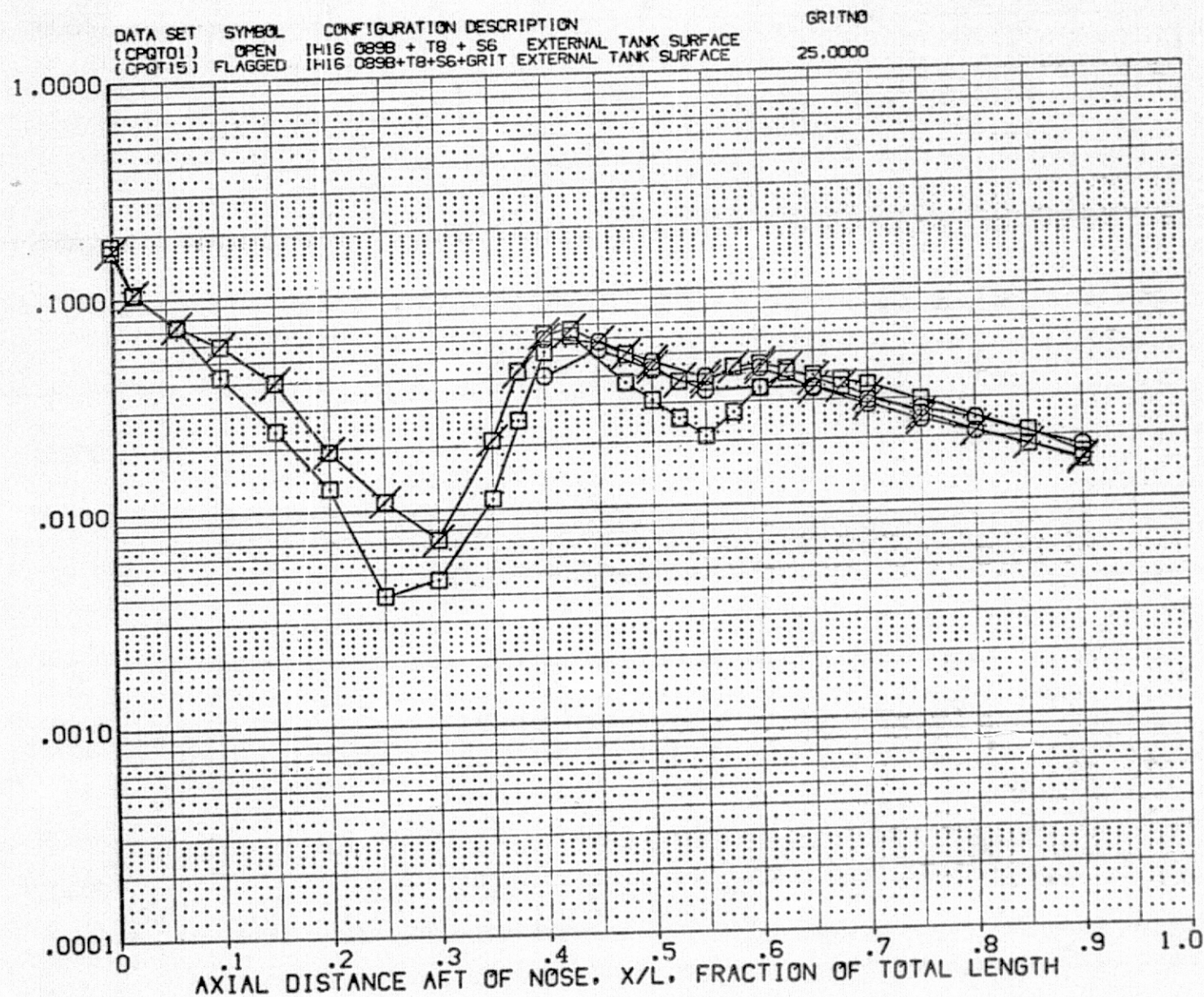


FIG. 34 INTEGRATED VEHICLE - ET SURFACE GRIT EFFECT



SYMBOL PHI HAW/HT RN/L  
 ○ .000 .850 4.570  
 □ 45.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000 DELTAH .175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

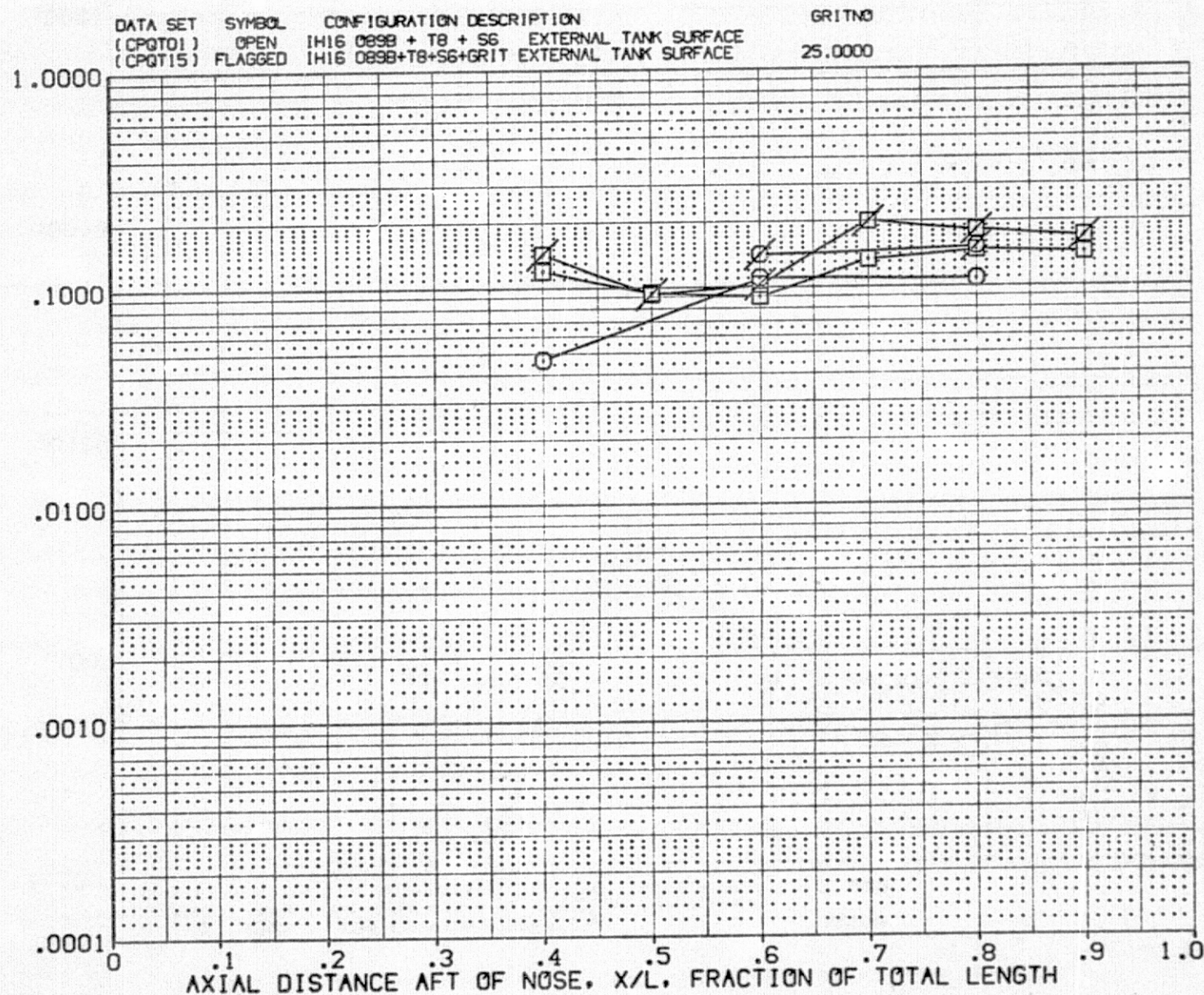


FIG. 34 INTEGRATED VEHICLE - ET SURFACE GRIT EFFECT



SYMBOL	PHI	HAW/HT	RN/L
○	67.500	.850	4.570
□	90.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.  $H/H_{REF}$

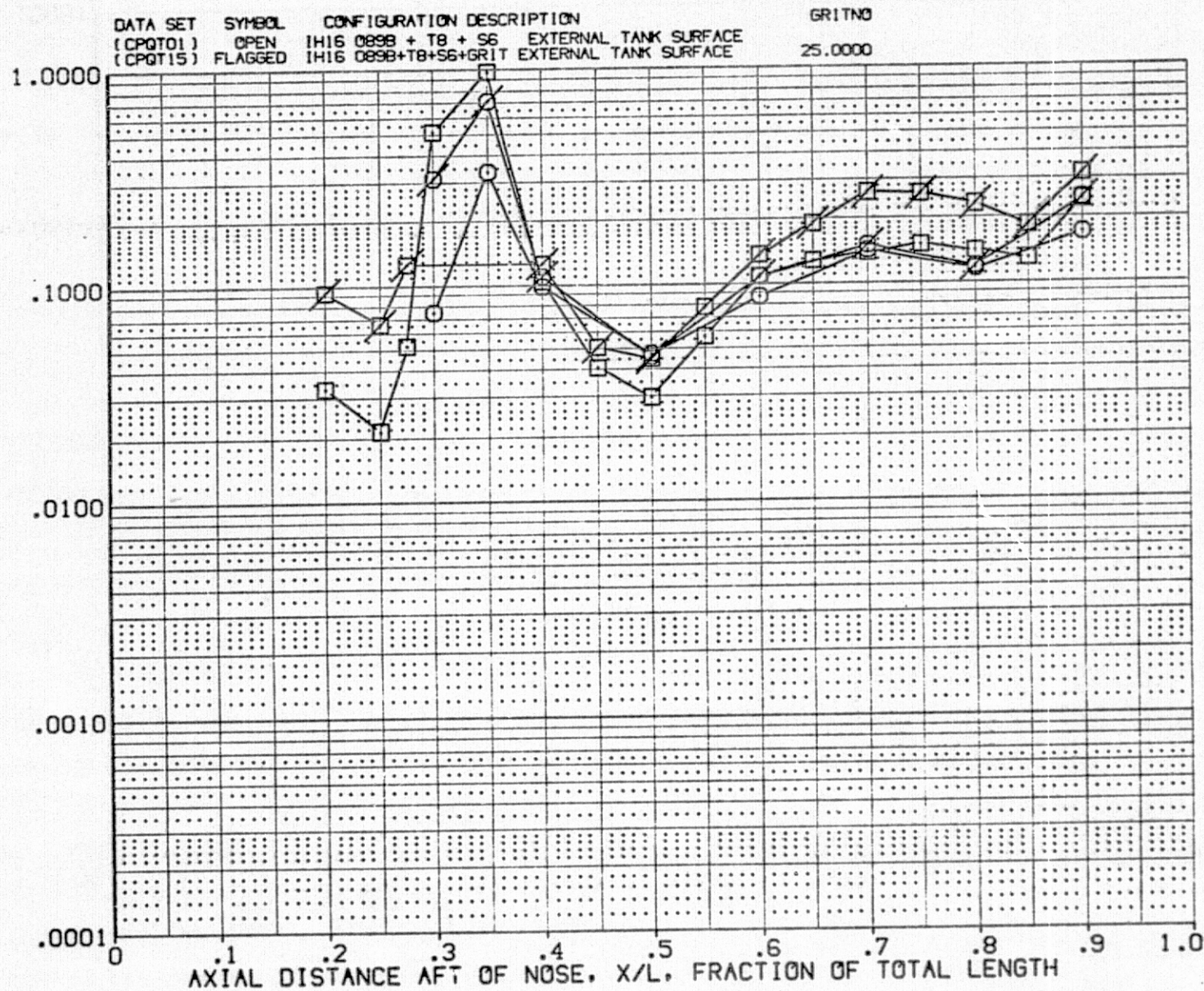


FIG. 34 INTEGRATED VEHICLE - ET SURFACE GRIT EFFECT



SYMBOL	PHI	HAW/HT	RN/L
○	112.500	.850	4.570
□	135.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

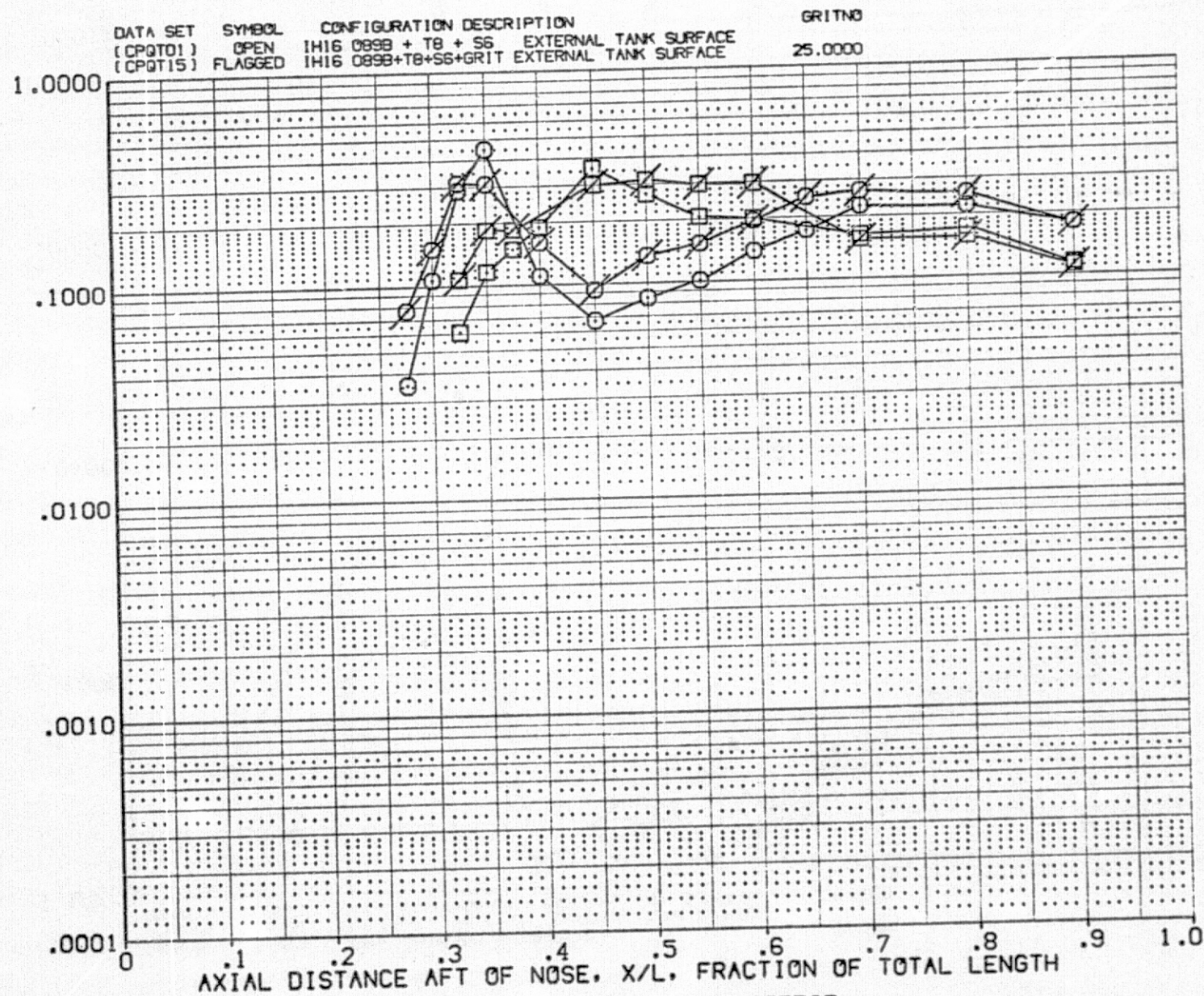


FIG. 34 INTEGRATED VEHICLE - ET SURFACE GRIT EFFECT



SYMBOL	PHI	HAV/HT	RN/L
○	157.500	.850	4.570
□	180.000		

PARAMETRIC VALUES		
MACH	3.700	ALPHA .000
BETA	.000	DELTAH .175

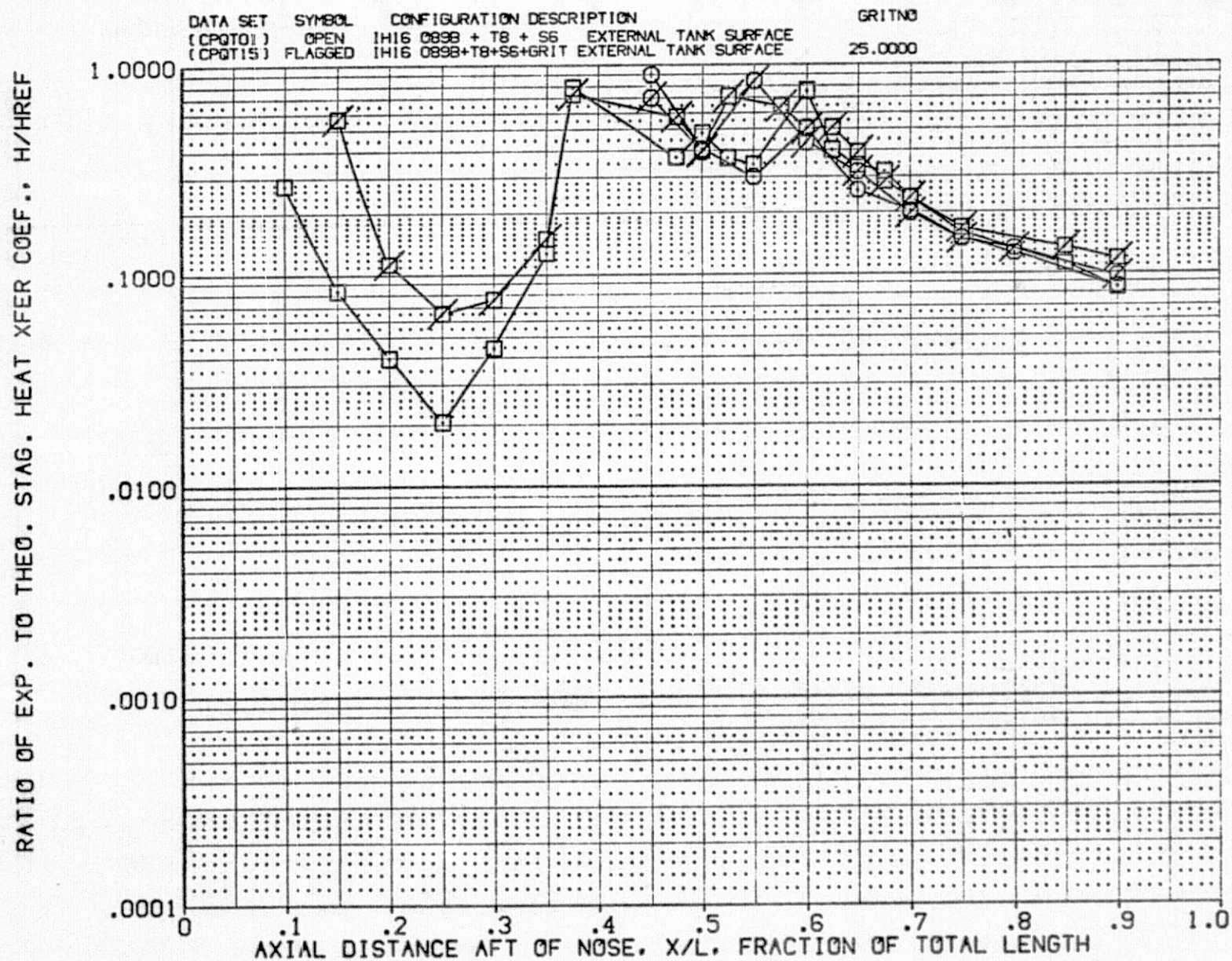


FIG. 34 INTEGRATED VEHICLE - ET SURFACE GRIT EFFECT



SYMBOL	PHI	HAW/HT	RN/L
○	.000	.900	4.570
□	45.000		

PARAMETRIC VALUES		
MACH	3.700	ALPHA
BETA	.000	DELTAH
		.000
		.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

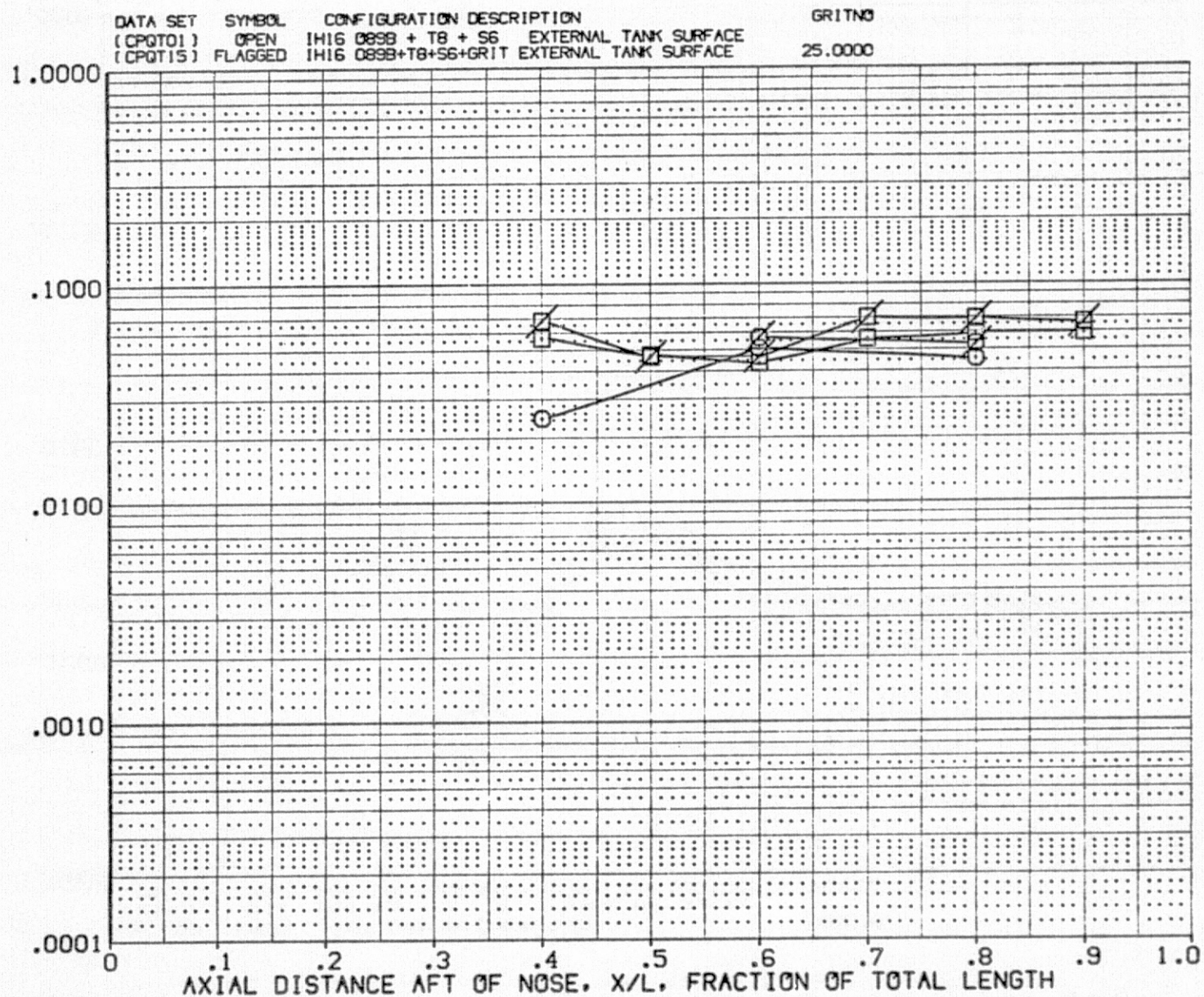


FIG. 34 INTEGRATED VEHICLE - ET SURFACE GRIT EFFECT

SYMBOL	PHI	HAW/HT	RN/L
○	67.500	.900	4.570
□	90.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

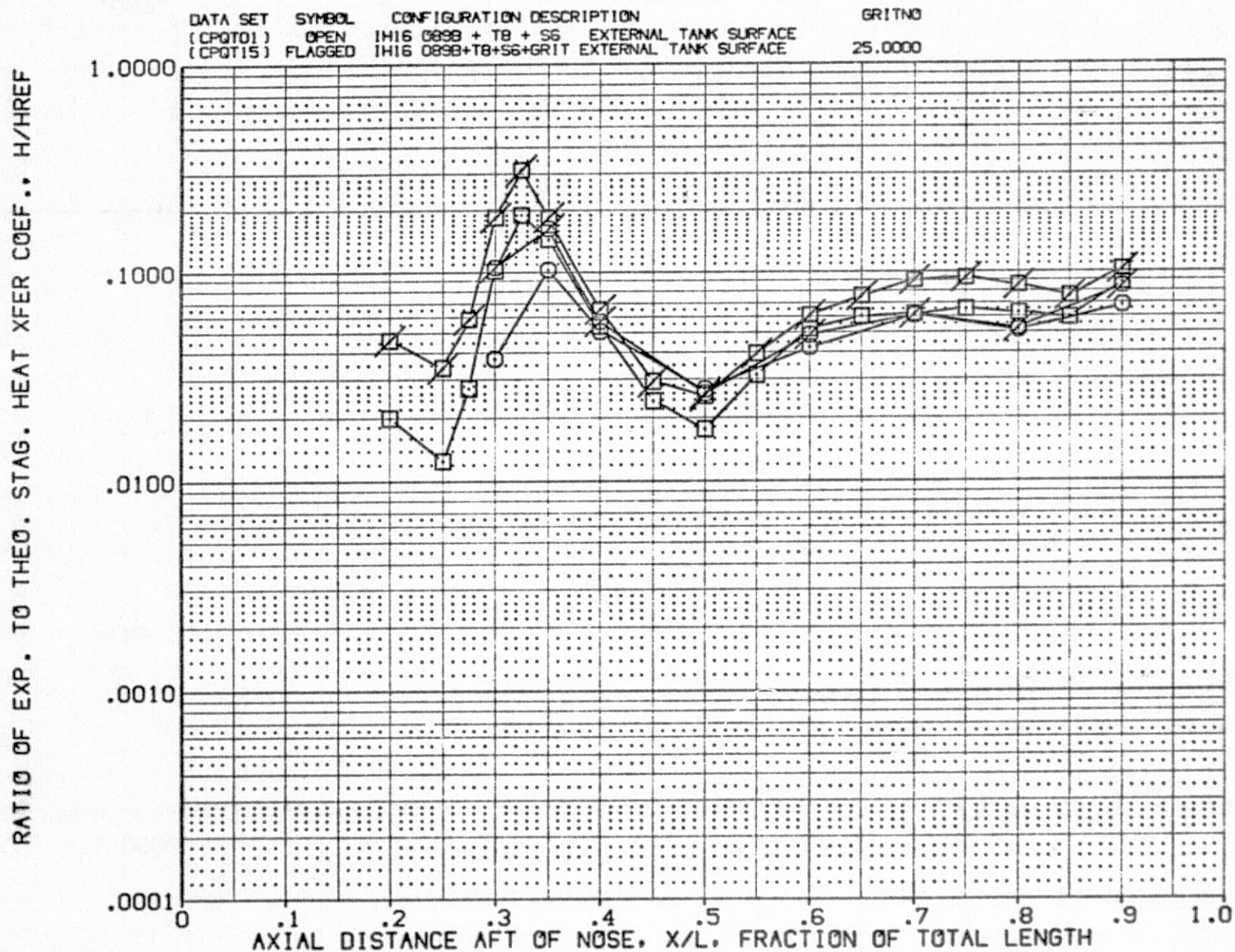


FIG. 34 INTEGRATED VEHICLE - ET SURFACE GRIT EFFECT



SYMBOL	PHI	HAV/HT	RN/L
○	112.500	.900	4.570
□	135.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

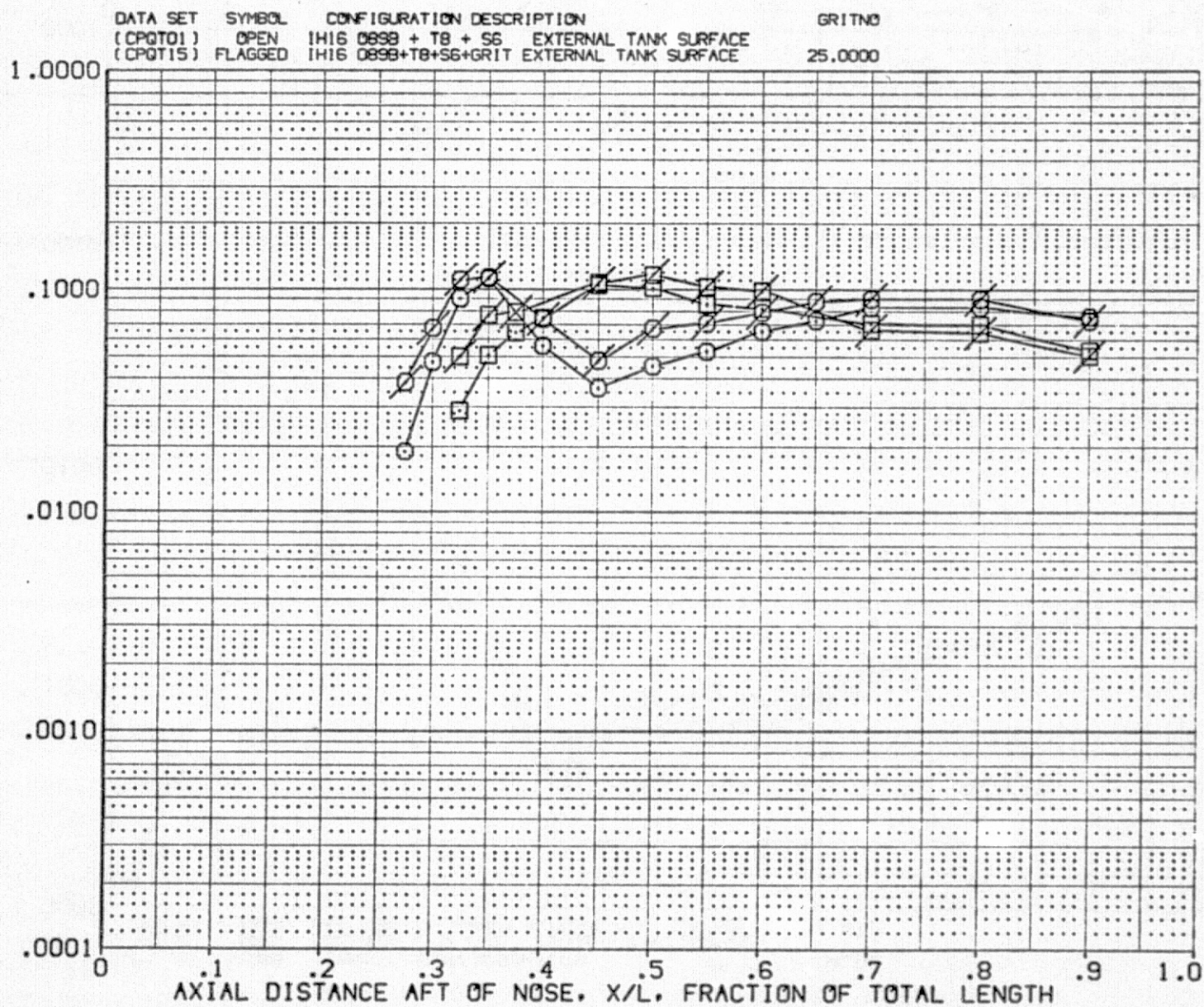


FIG. 34 INTEGRATED VEHICLE - ET SURFACE GRIT EFFECT



SYMBOL	PHI	HAV/HT	RN/L
○	157.500	.900	4.570
□	180.000		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
ALPHA	.000
DELTA	.175

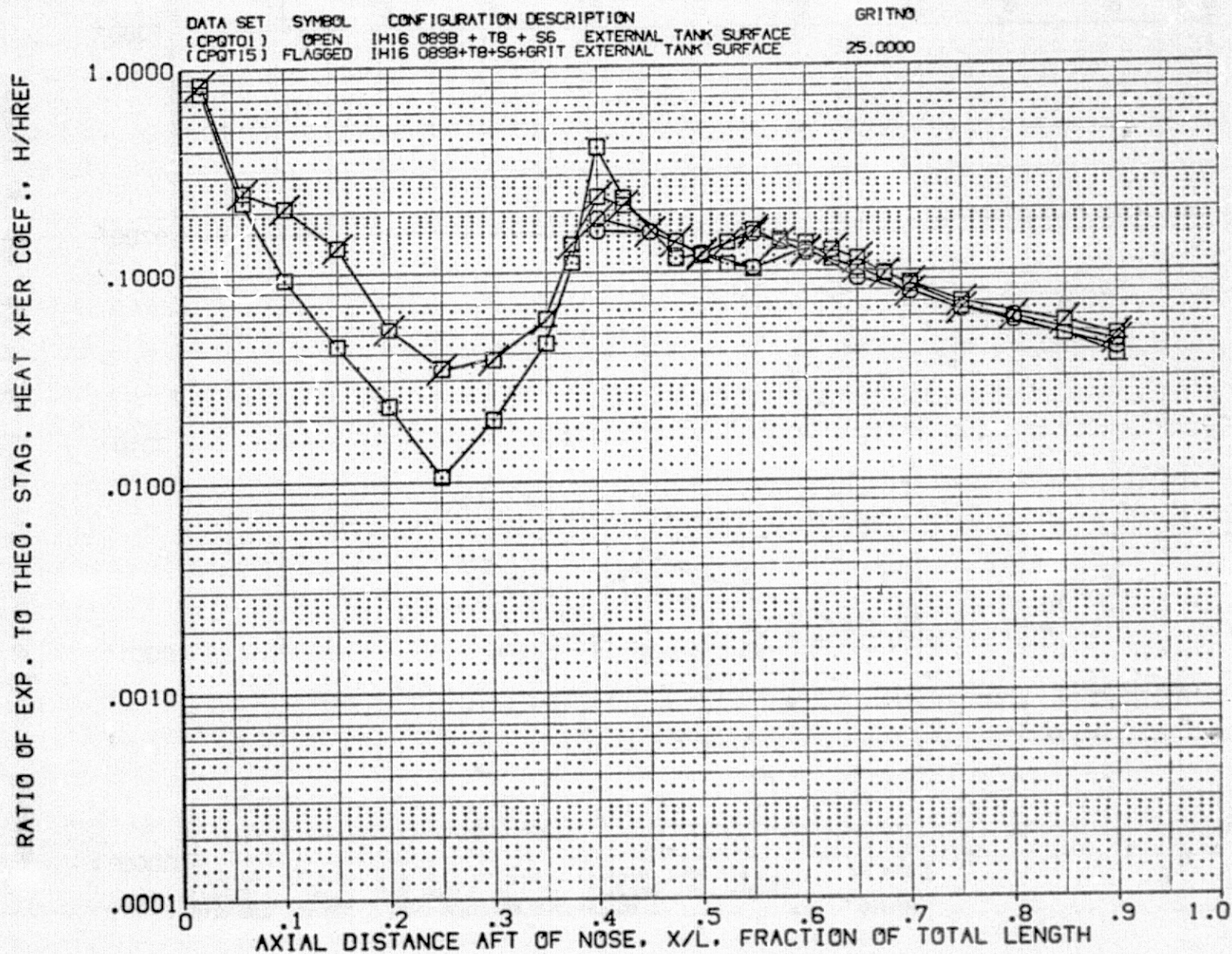


FIG. 34 INTEGRATED VEHICLE - ET SURFACE GRIT EFFECT



SYMBOL PHI HAW/HT RN/L  
 ○ .000 1.000 4.570  
 □ 45.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000 DELTAH .175

DATA SET SYMBOL CONFIGURATION DESCRIPTION GRITNO  
 [CPQT01] OPEN IH16 0898 + T8 + S6 EXTERNAL TANK SURFACE  
 [CPQT15] FLAGGED IH16 0898+T8+S6+GRIT EXTERNAL TANK SURFACE 25.0000

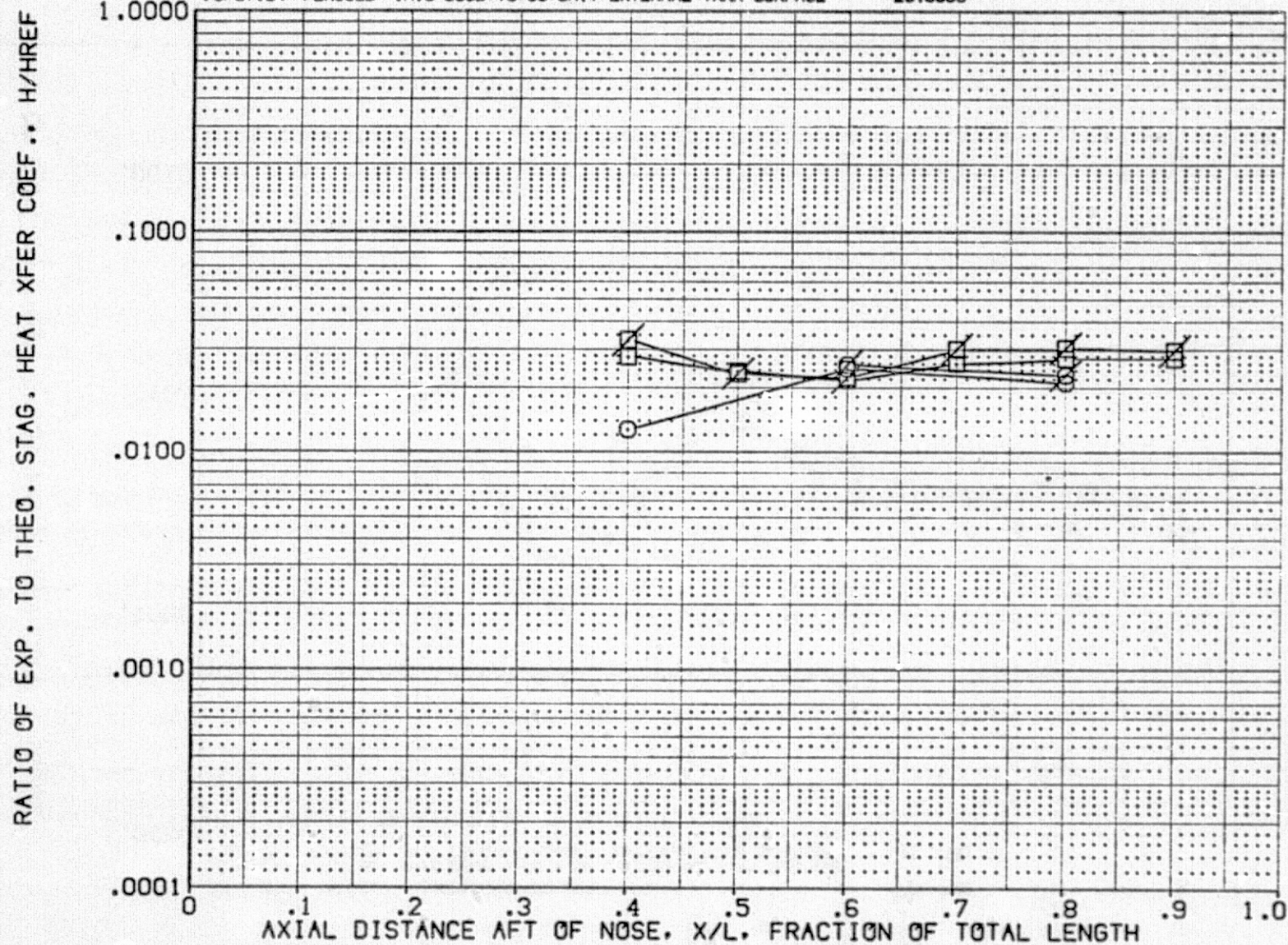


FIG. 34 INTEGRATED VEHICLE - ET SURFACE GRIT EFFECT



SYMBOL	PHI	HAW/HT	RN/L
○	67.500	1.000	4.570
□	90.000		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
ALPHA	.000
DELTA	.175

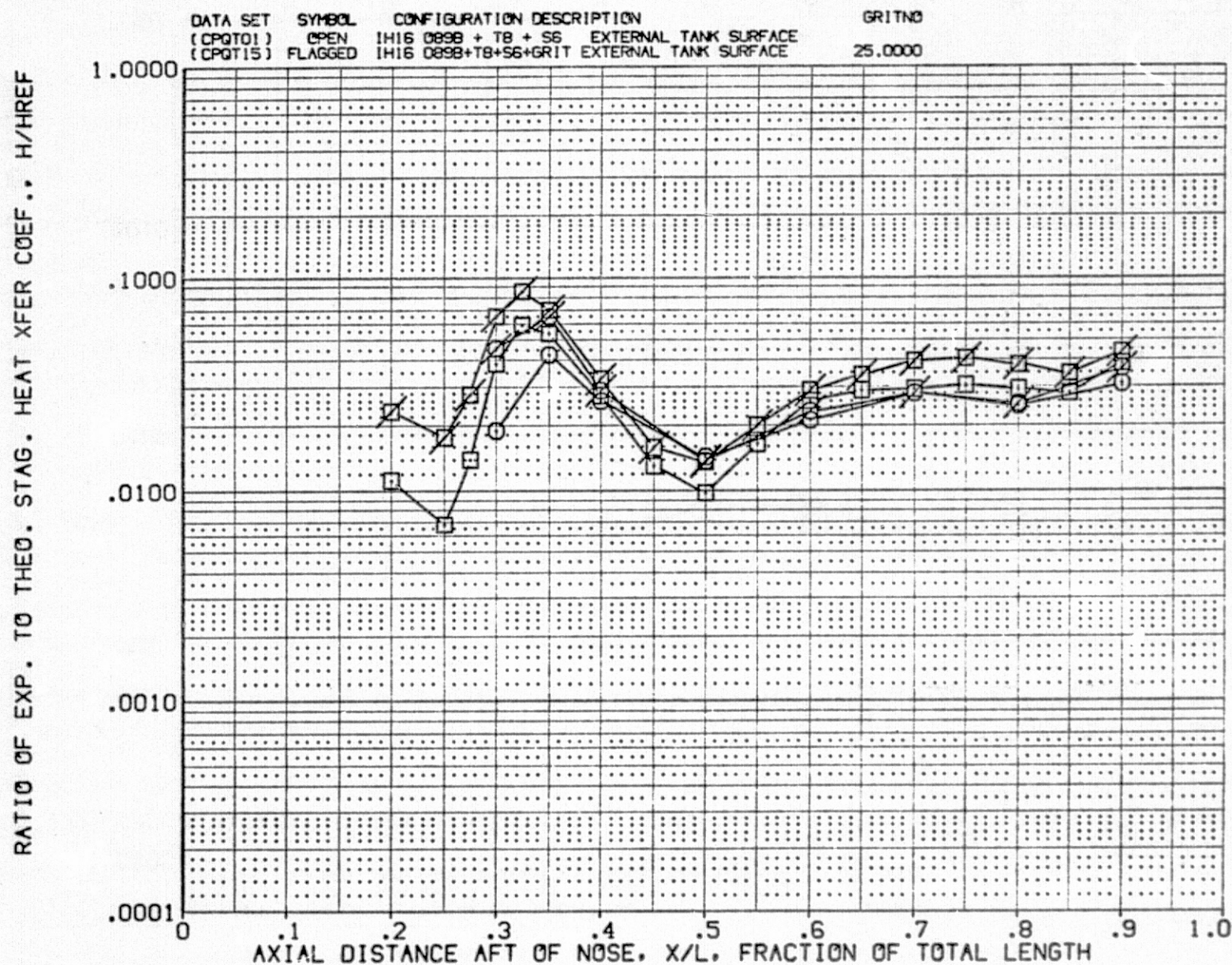


FIG. 34 INTEGRATED VEHICLE - ET SURFACE GRIT EFFECT



SYMBOL	PHI	HAW/HT	RN/L
○	112.500	1.000	4.570
□	135.000		

		PARAMETRIC VALUES	
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

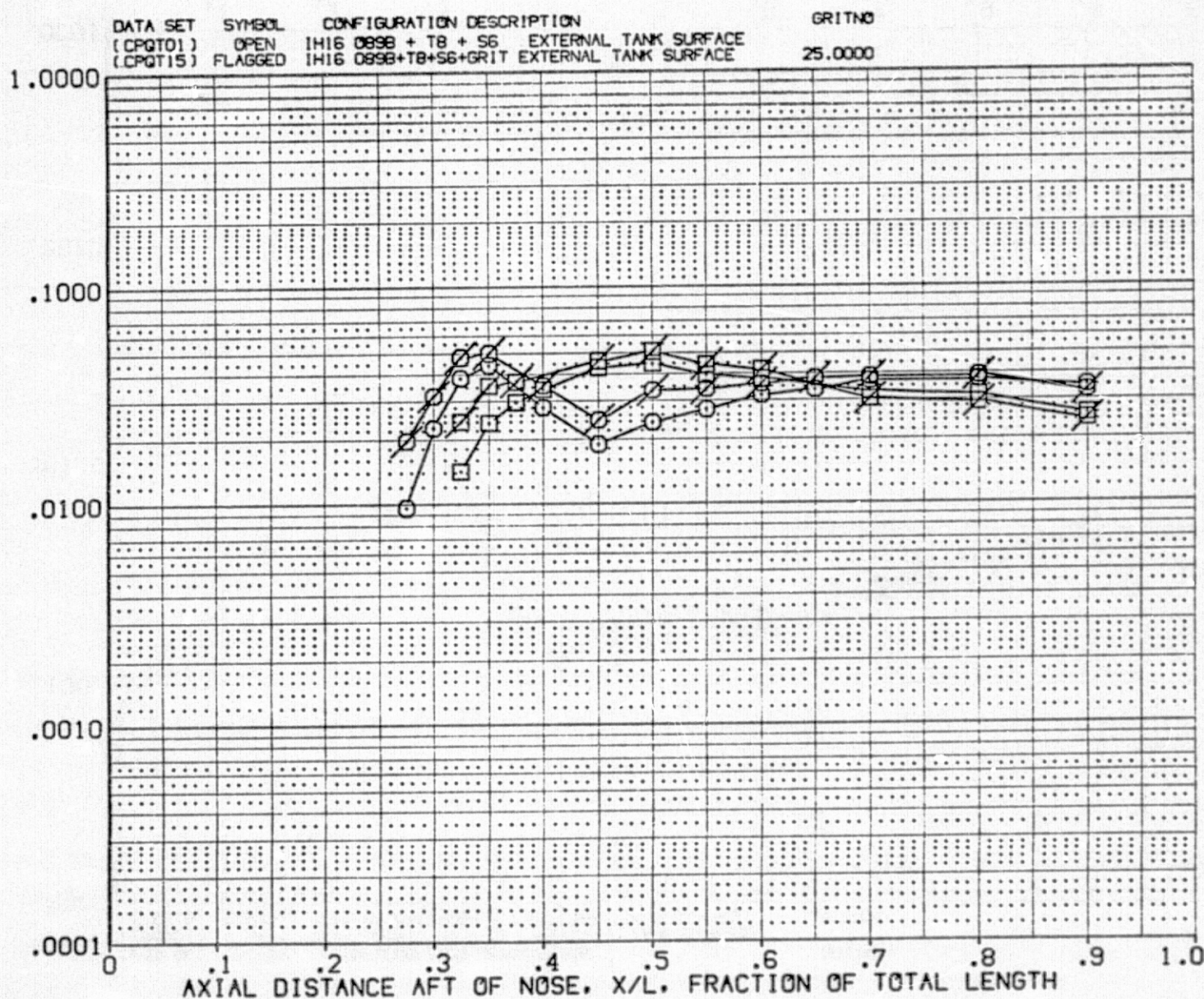


FIG. 34 INTEGRATED VEHICLE - ET SURFACE GRIT EFFECT



SYMBOL	PHI	HAW/HT	RN/L
○	157.500	1.000	4.570
□	180.000		

		PARAMETRIC VALUES	
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

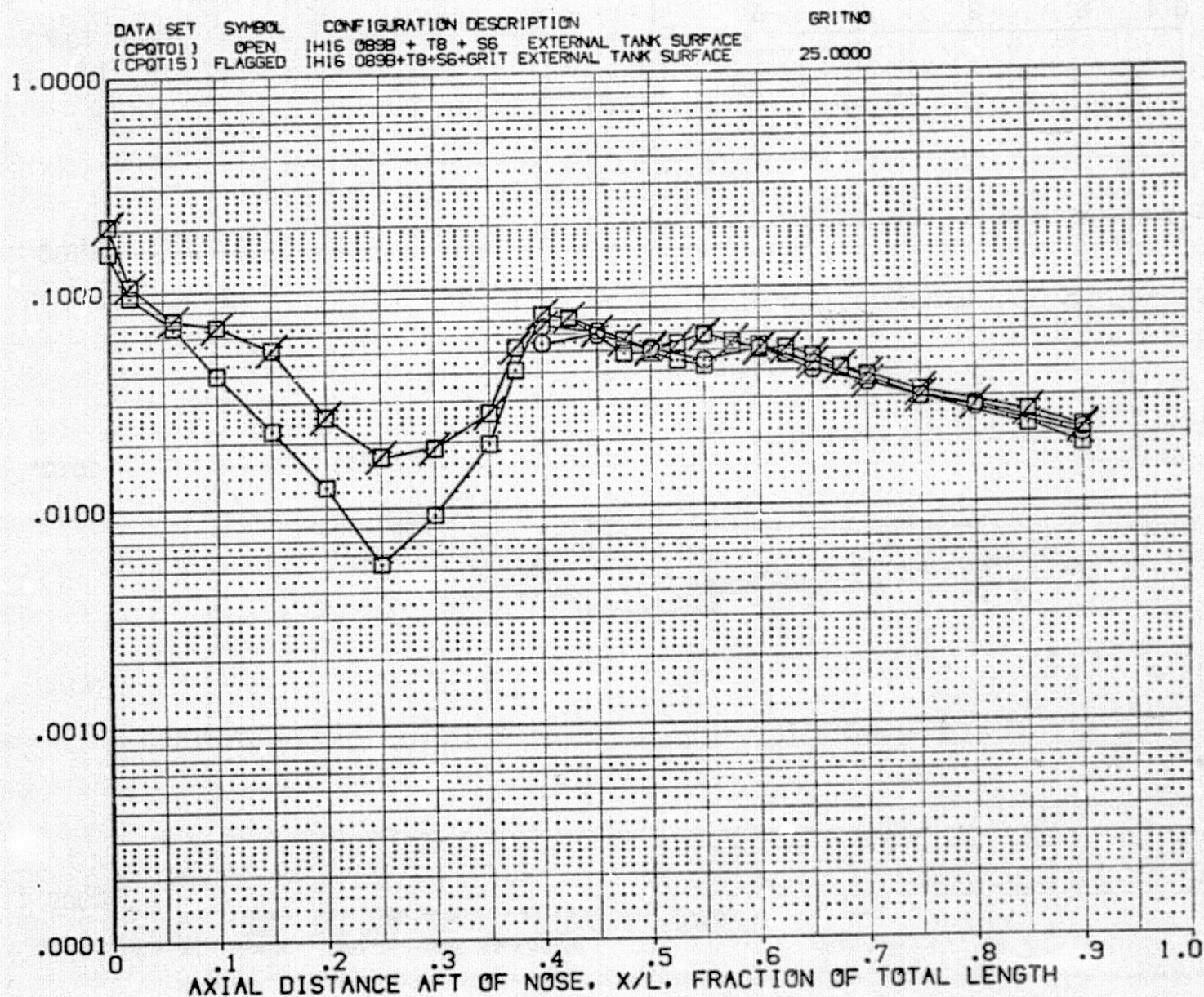


FIG. 34 INTEGRATED VEHICLE - ET SURFACE GRIT EFFECT



SYMBOL PHI HAW/HT RN/L  
 ○ .000 .850 1.940  
 □ 45.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

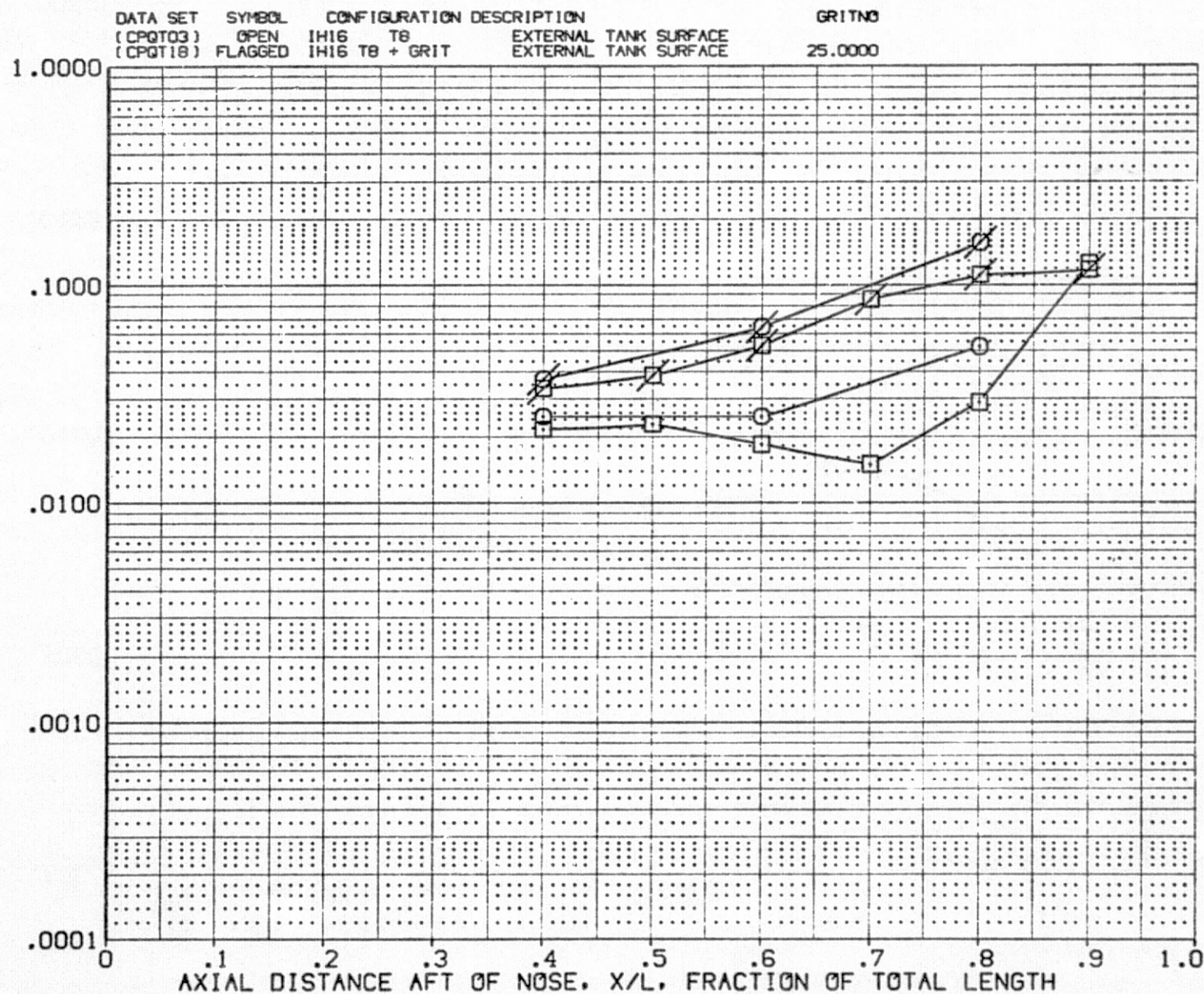


FIG. 35 ET ALONE

GRIT EFFECT

SYMBOL  
 ○  
 □

PHI  
 67.500  
 90.000

HAW/HT  
 .850

RN/L  
 1.940

MACH  
 BETA

PARAMETRIC VALUES  
 3.700 ALPHA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF. H/HREF

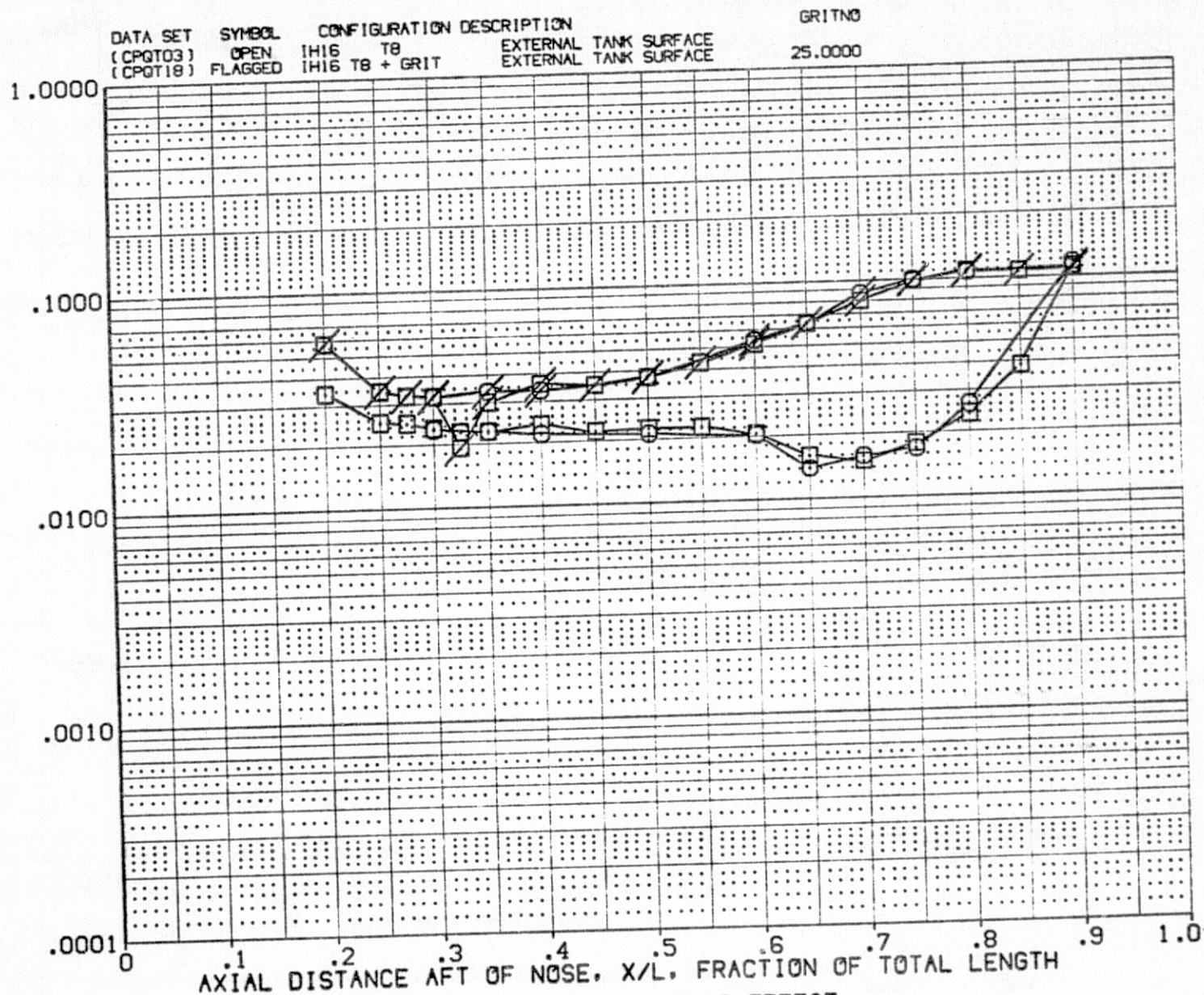


FIG. 35 ET ALONE

GRIT EFFECT



SYMBOL PHI HAW/HT RN/L  
 ○ 112.500  
 □ 135.000

MACH  
BETA

PARAMETRIC VALUES  
 3.700 ALPHA .000  
 .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

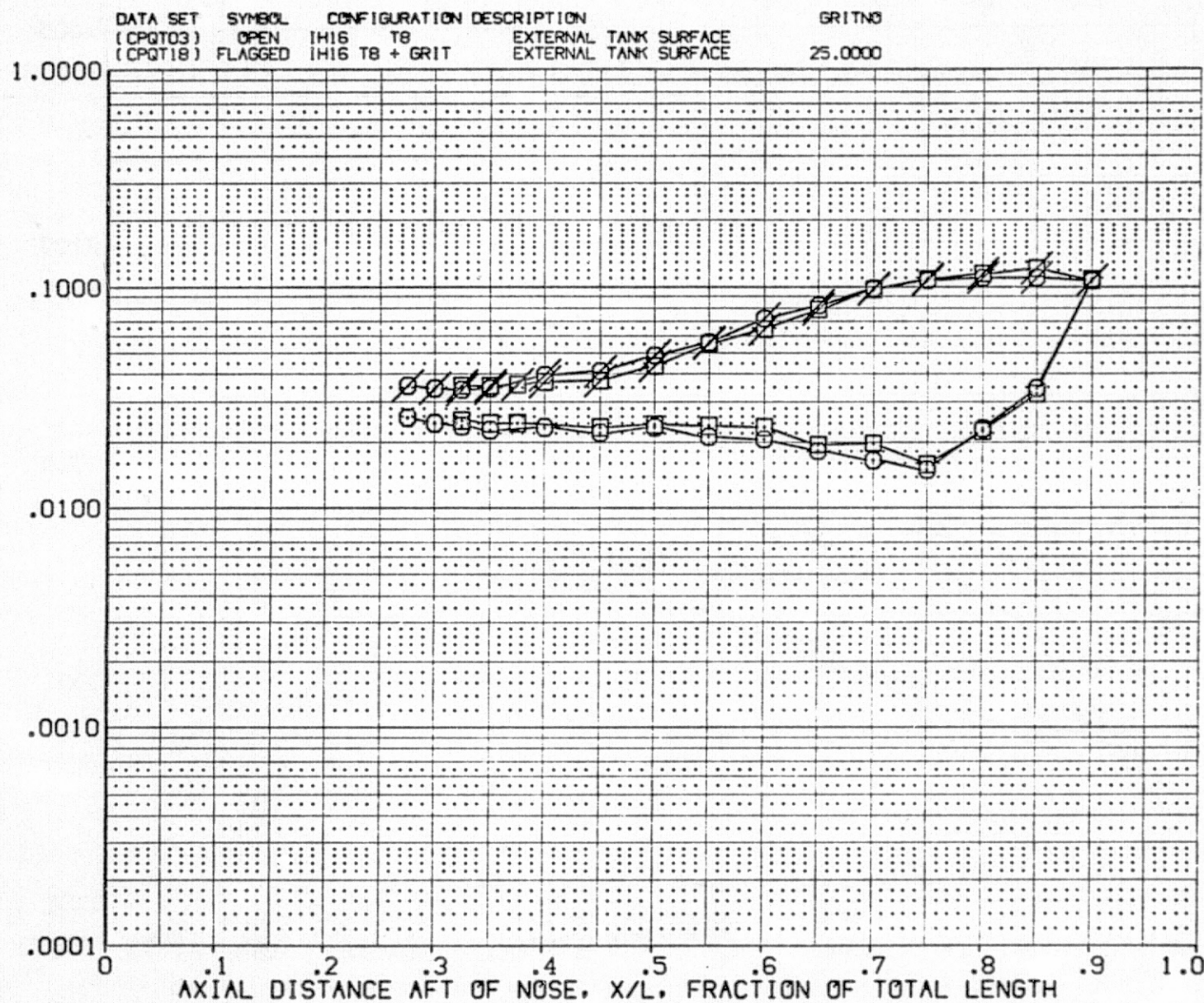


FIG. 35 ET ALONE

GRIT EFFECT

SYMBOL PHI HAW/HT RN/L  
 O 157.500 .850 1.940  
 □ 180.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

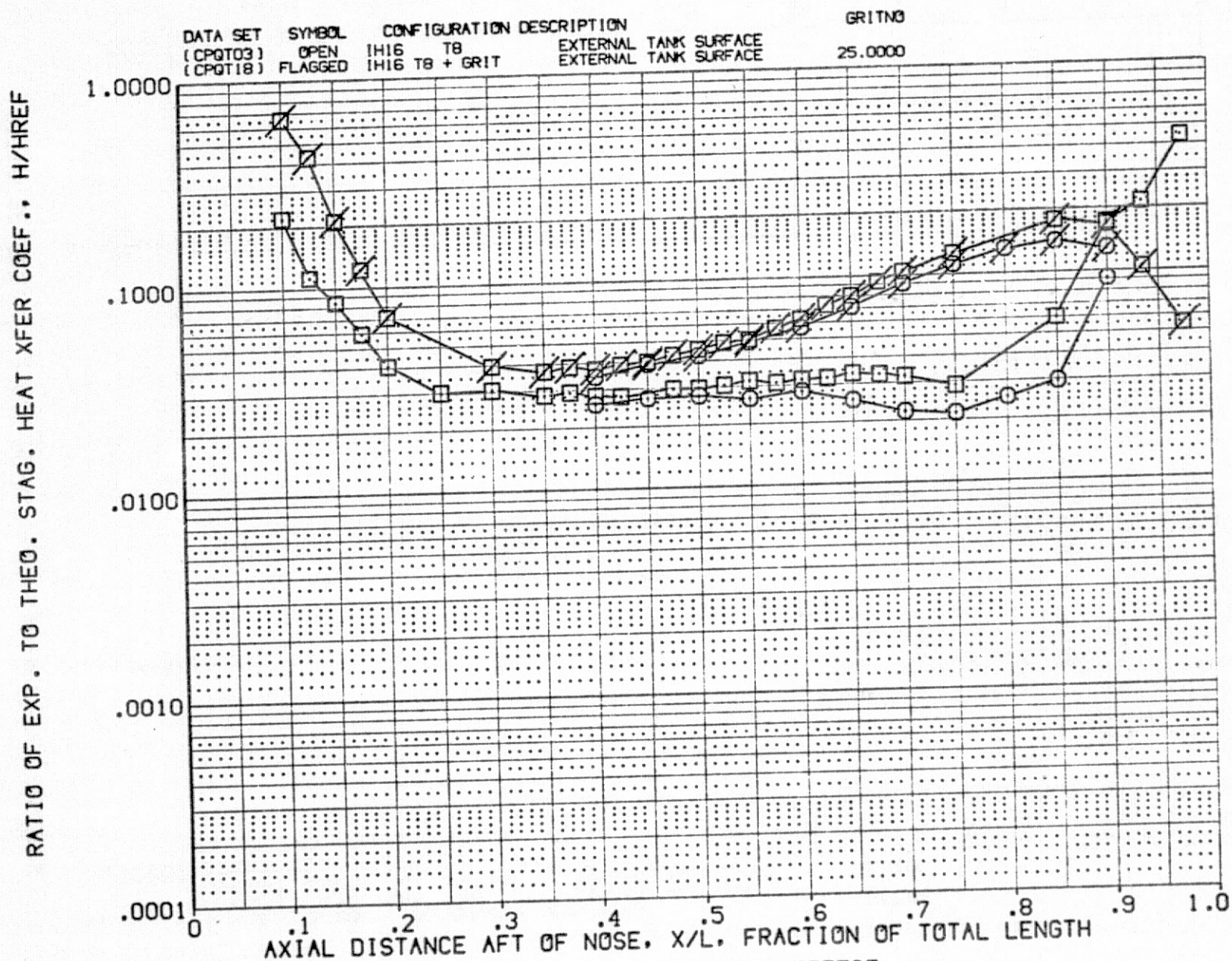


FIG. 35 ET ALONE

GRIT EFFECT



SYMBOL PHI HAV/HT RN/L  
 O .000 .900 1.940  
 □ 45.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $H/H_{REF}$

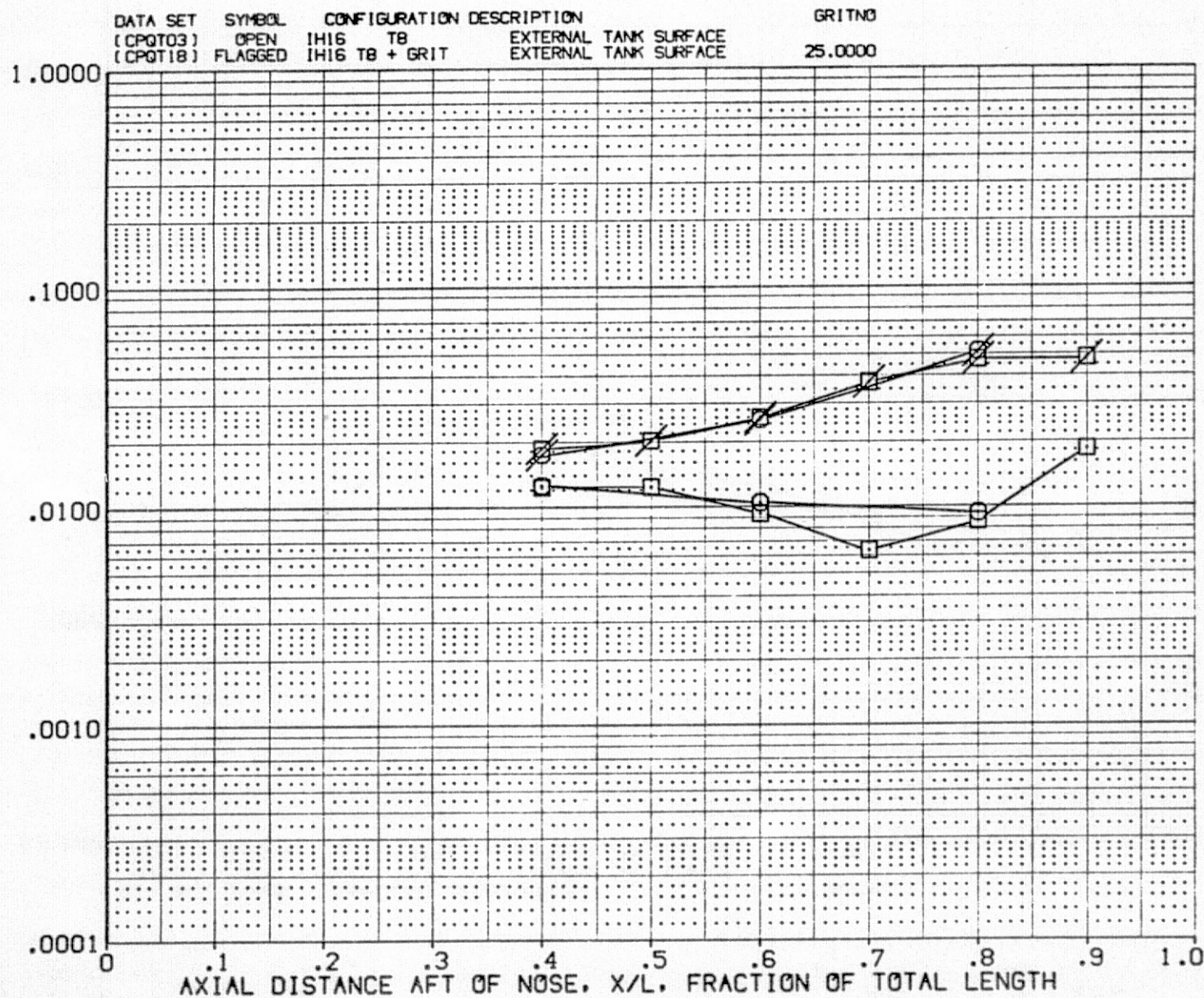


FIG. 35 ET ALONE

GRIT EFFECT

SYMBOL PHI HAW/HT RN/L  
 ○ 67.500  
 □ 90.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $H/H_{REF}$

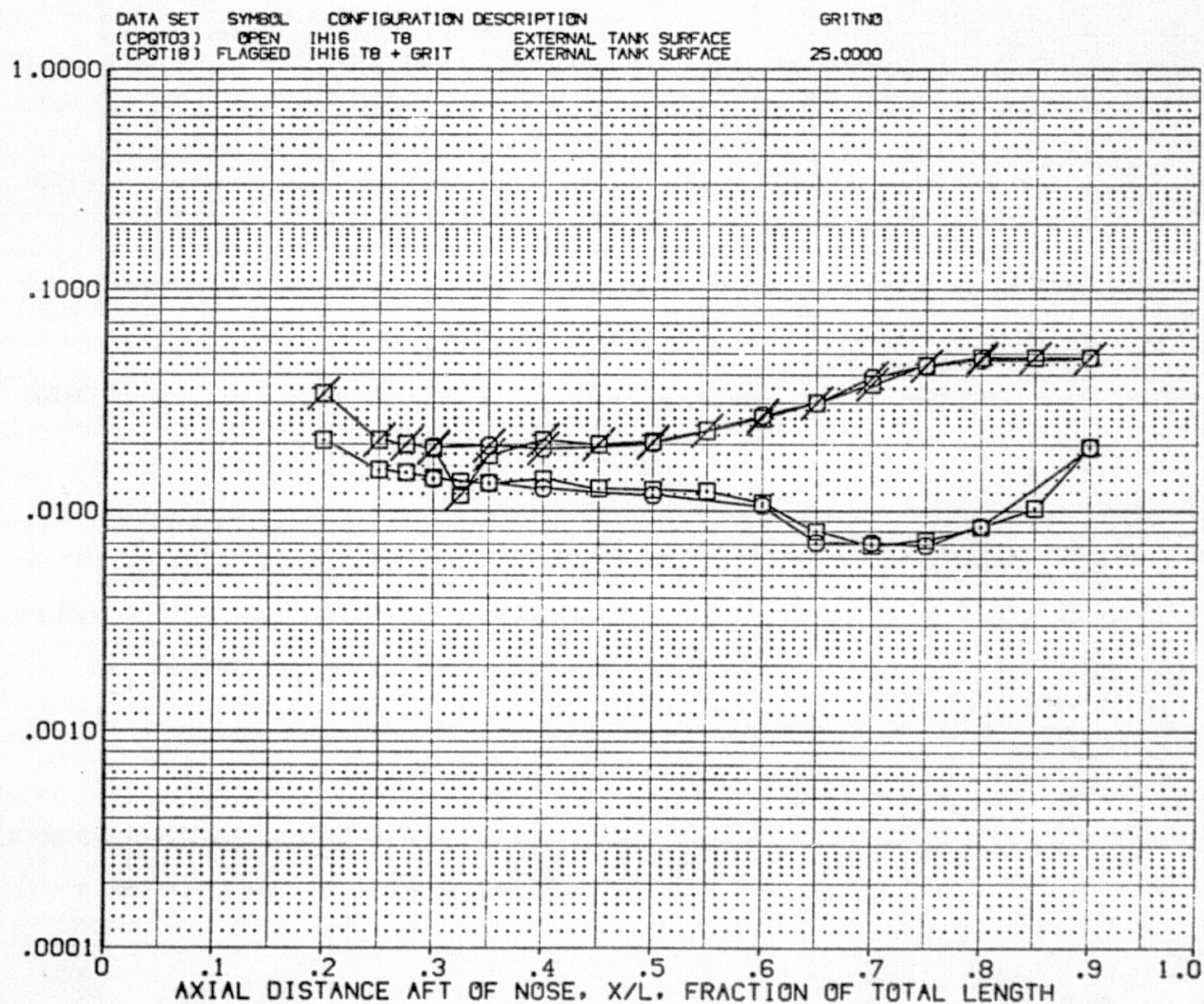


FIG. 35 ET ALONE

GRIT EFFECT



SYMBOL PHI HAW/HT RN/L  
 ○ 112.500  
 □ 135.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

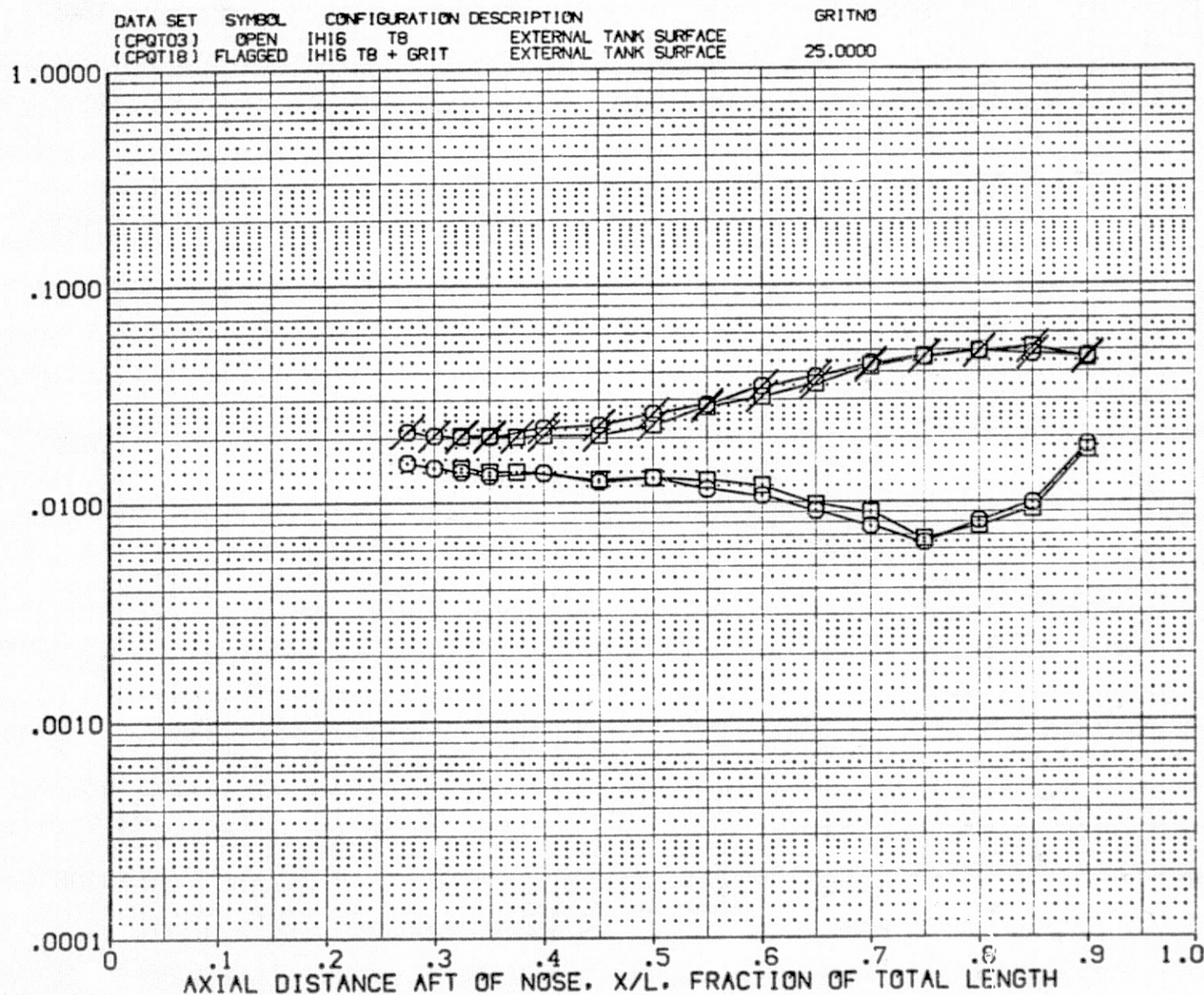


FIG. 35 ET ALONE

GRIT EFFECT

SYMBOL	PHI	HAW/HT	RN/L
○	157.500	.900	1.940
□	180.000		

PARAMETRIC VALUES		
MACH	3.700	ALPHA
BETA	.000	

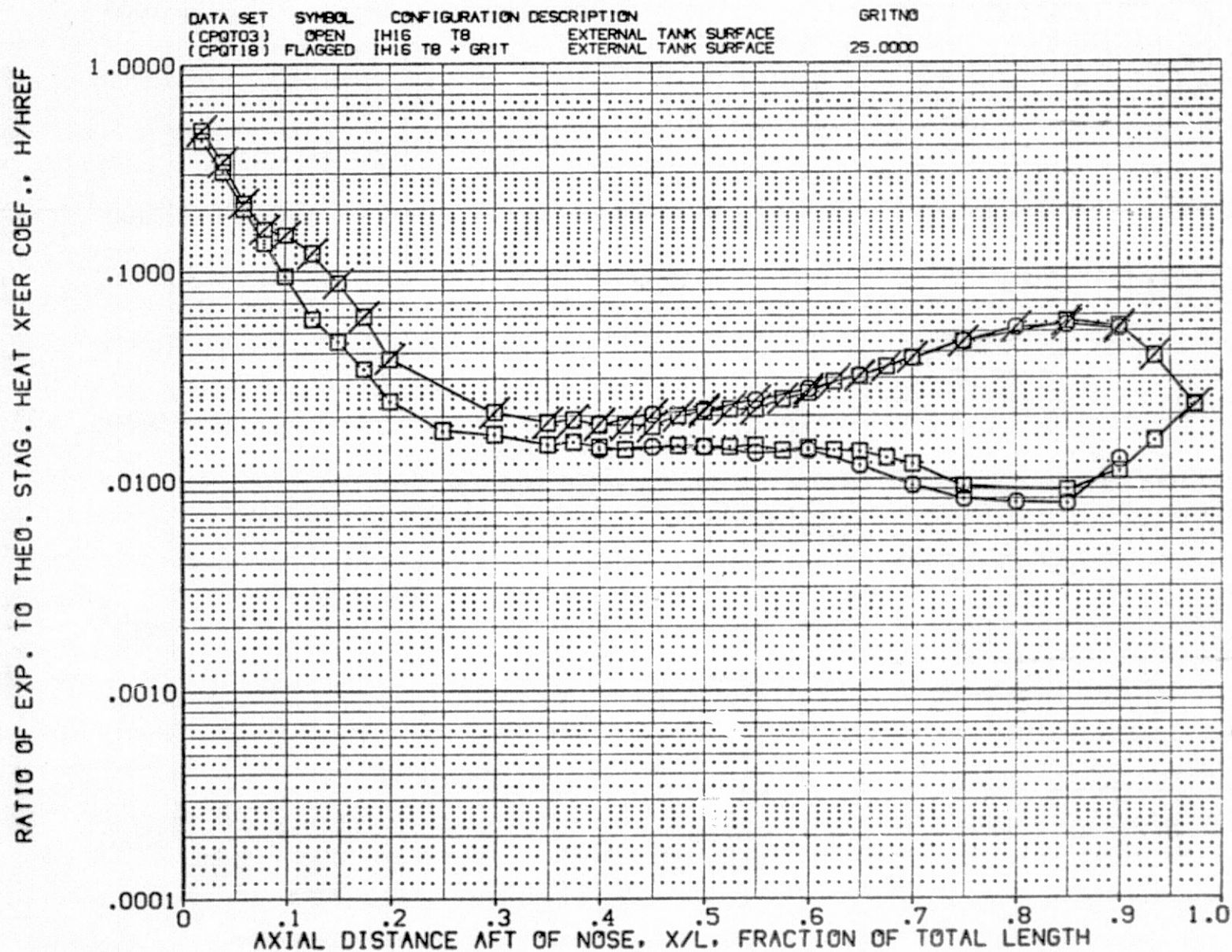


FIG. 35 ET ALONE

GRIT EFFECT



SYMBOL PHI HAV/HT RN/L  
 O .000 1.000 1.940  
 □ 45.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $H/H_{REF}$

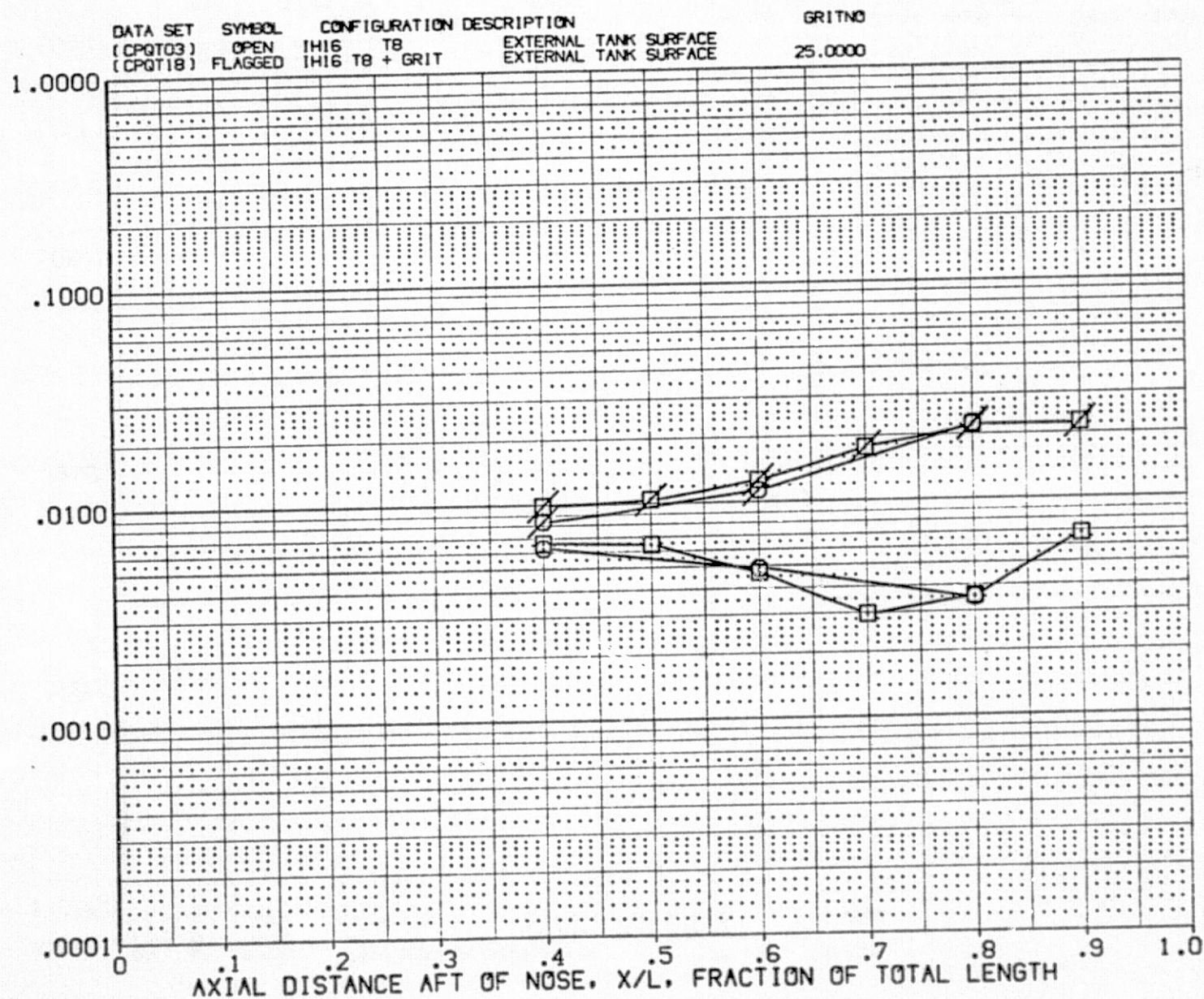


FIG. 35 ET ALONE

GRIT EFFECT

SYMBOL PHI HAW/HT RN/L  
 ○ 67.500 1.000 1.940  
 □ 90.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

DATA SET SYMBOL CONFIGURATION DESCRIPTION GRITNO  
 (CPQT03) OPEN IH16 TB EXTERNAL TANK SURFACE 25.0000  
 (CPQT18) FLAGGED IH16 TB + GRIT EXTERNAL TANK SURFACE

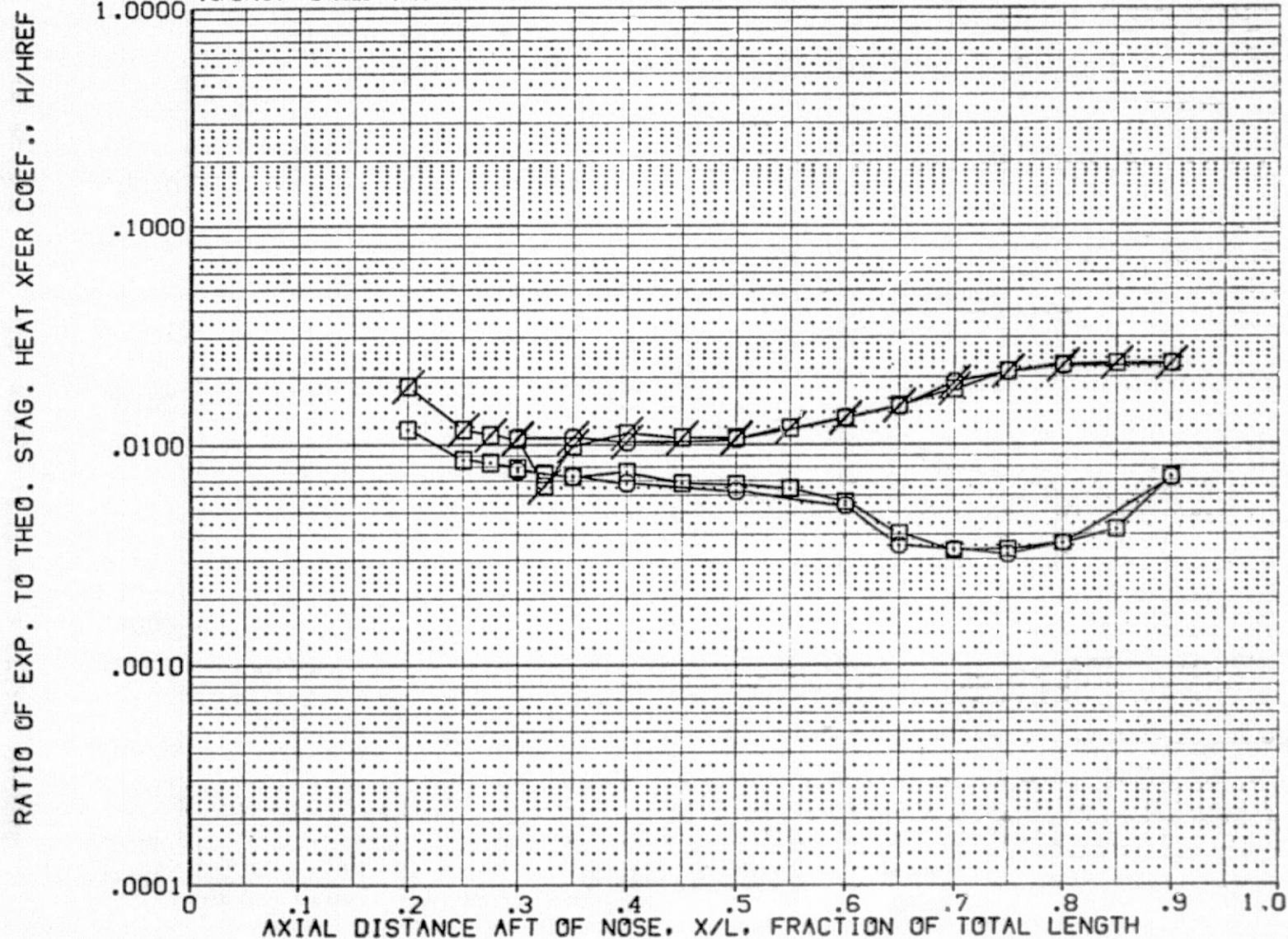


FIG. 35 ET ALONE

GRIT EFFECT



SYMBOL PHI HAW/HT RN/L  
 ○ 112.500 1.000 1.940  
 □ 135.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $H/H_{REF}$

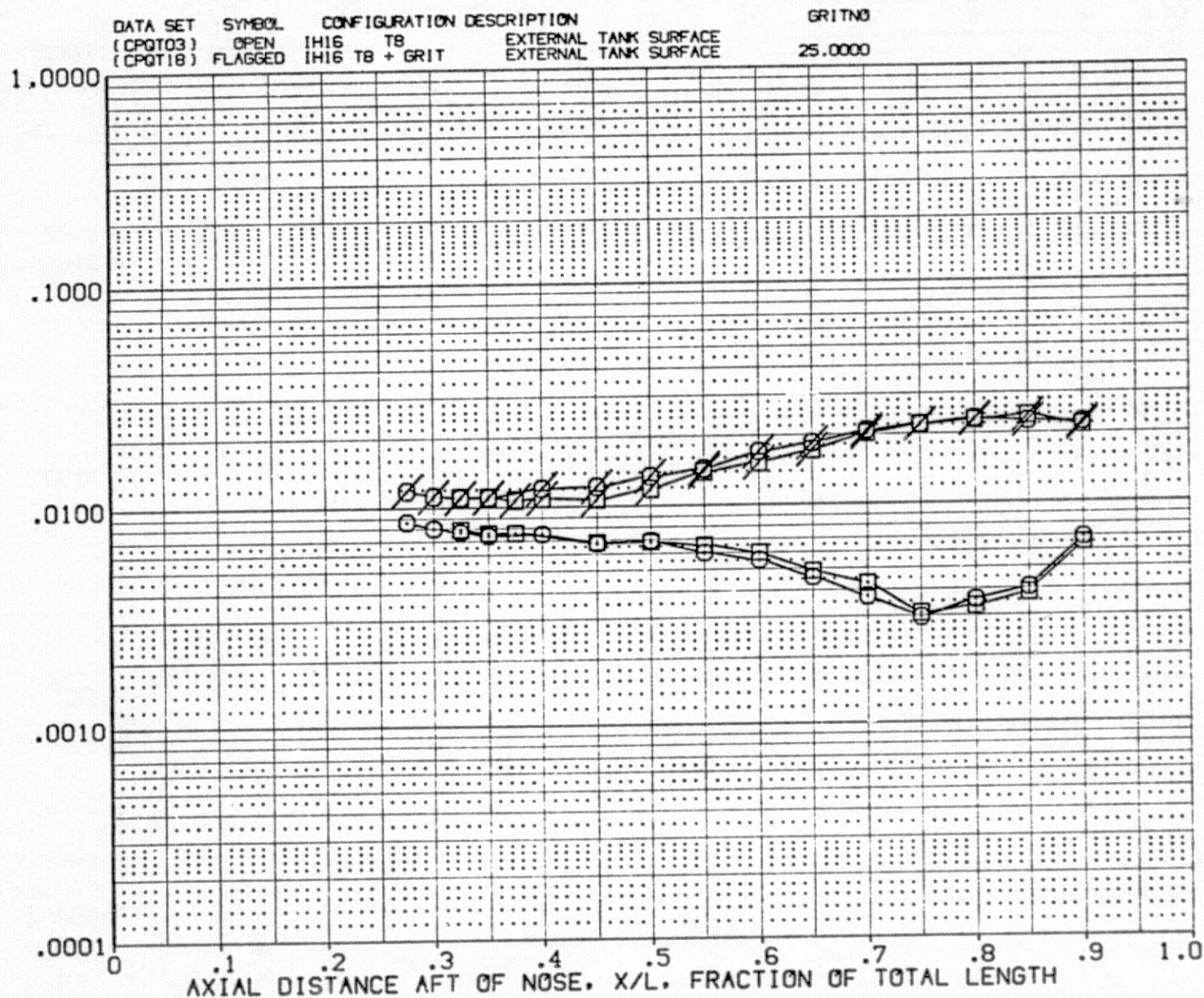


FIG. 35 ET ALONE

GRIT EFFECT

SYMBOL	PHI	HAV/HT	RN/L
○	157.500	1.000	1.940
□	180.000		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
ALPHA	.000

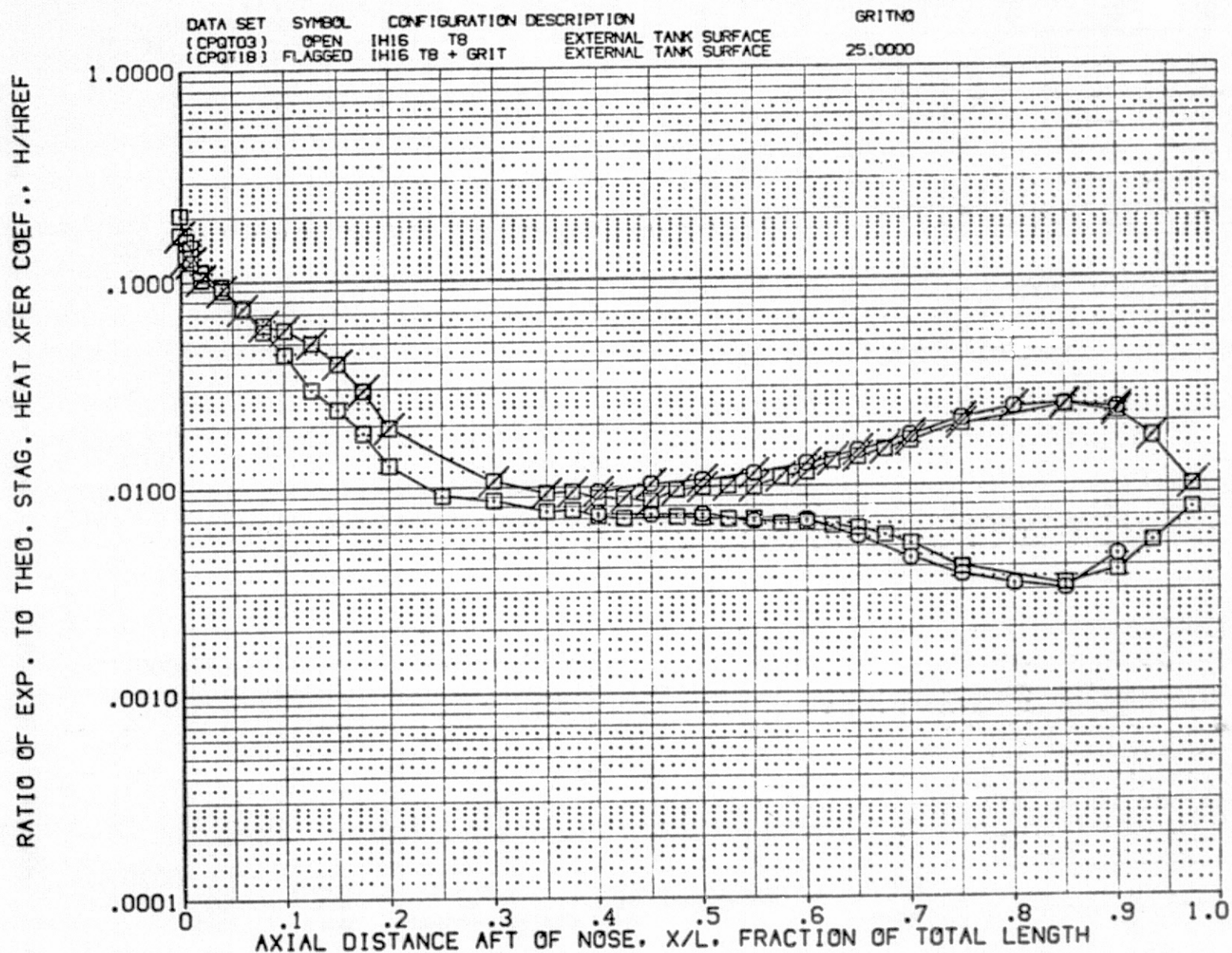


FIG. 35 ET ALONE

GRIT EFFECT



SYMBOL PHI HAW/HT RN/L  
 ○ .000 .850 4.640  
 □ 45.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

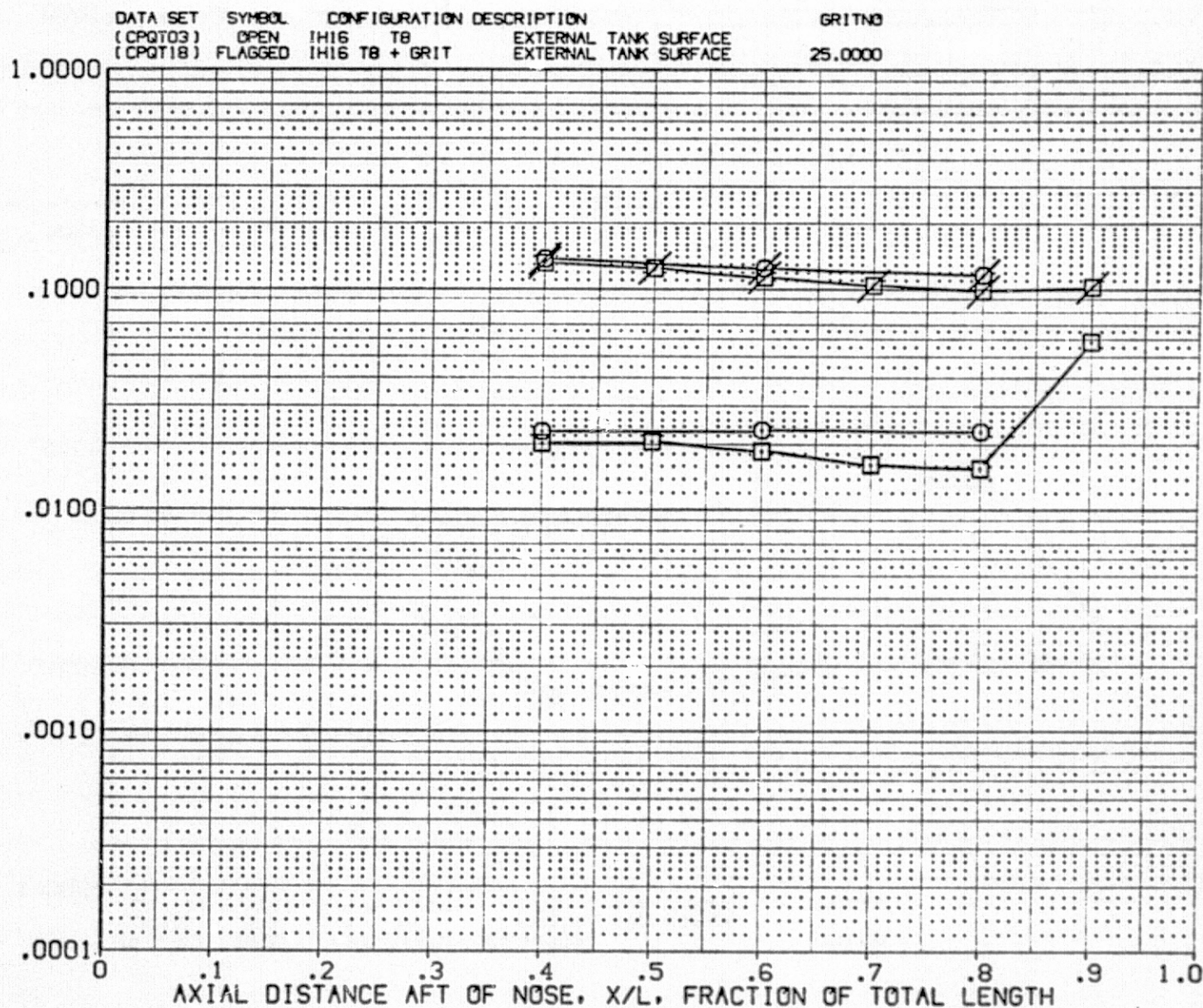


FIG. 35 ET ALONE

GRIT EFFECT

SYMBOL PHI HAV/HT RN/L  
 ○ 67.500 .850 4.640  
 □ 90.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

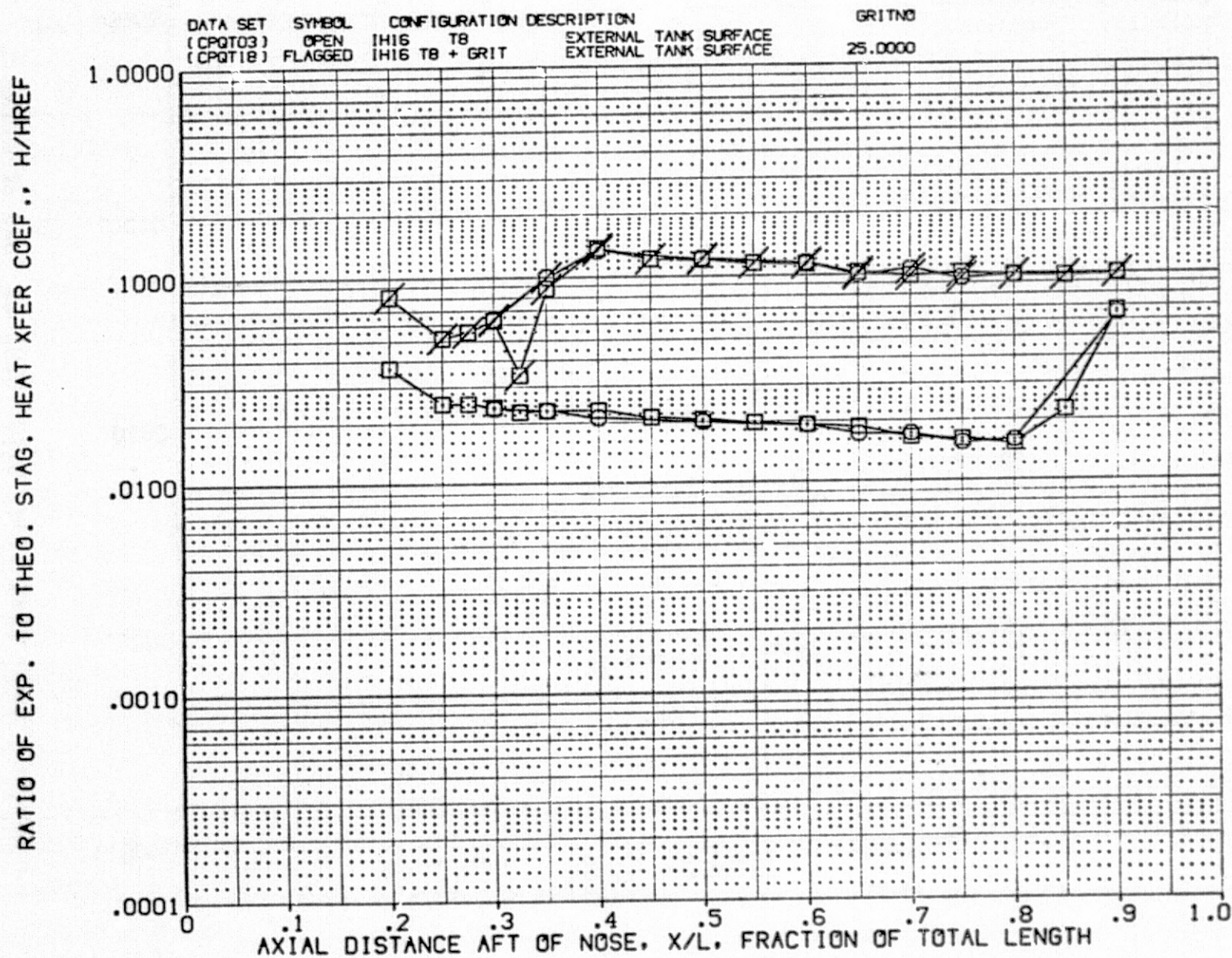


FIG. 35 ET ALONE

GRIT EFFECT



SYMBOL PHI HAW/HT RN/L  
 ○ 112.500 .950 4.640  
 □ 135.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

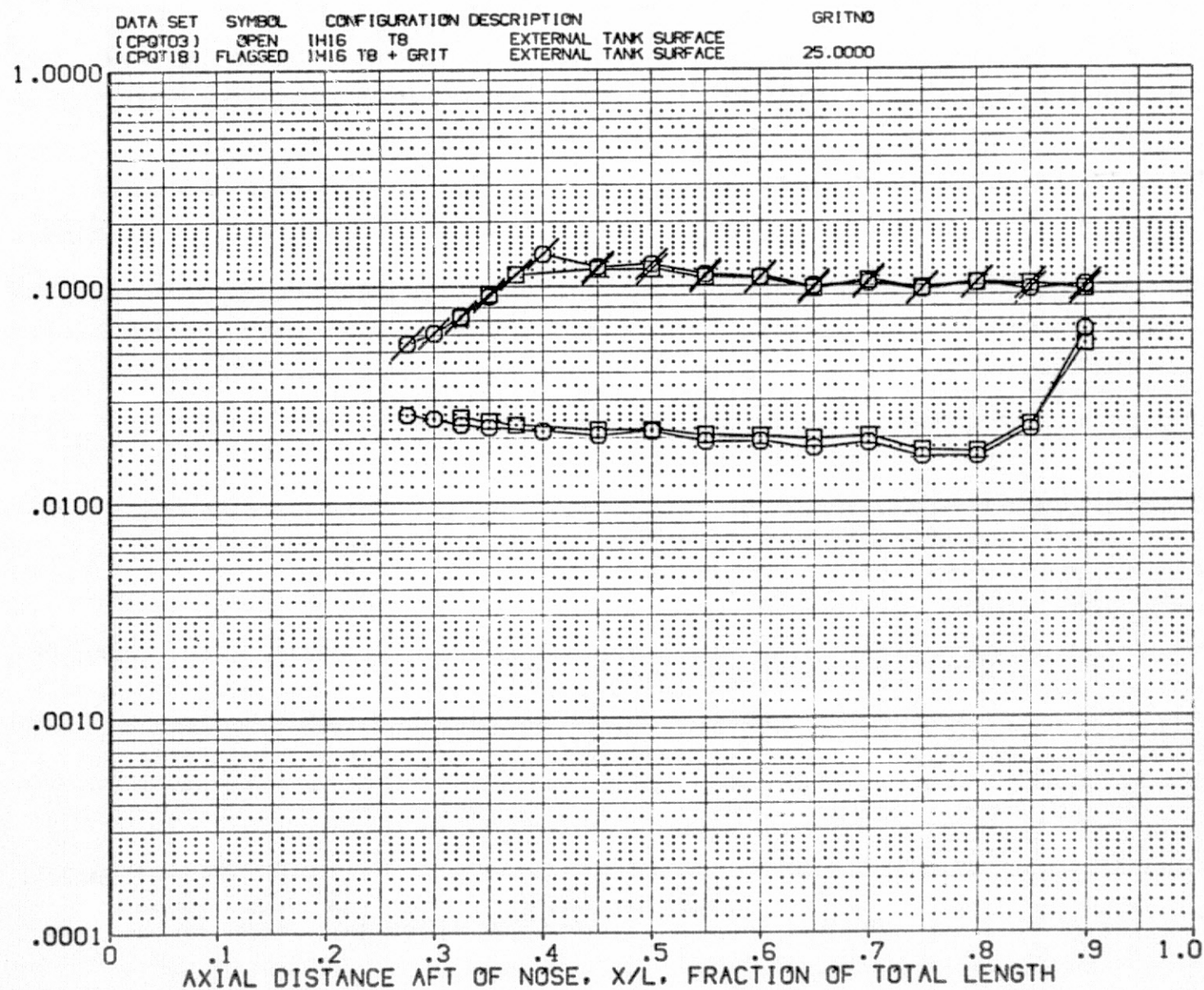


FIG. 35 ET ALONE

GRIT EFFECT

SYMBOL PHI HAW/HT RN/L  
 ○ 157.500 .850 4.640  
 □ 180.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

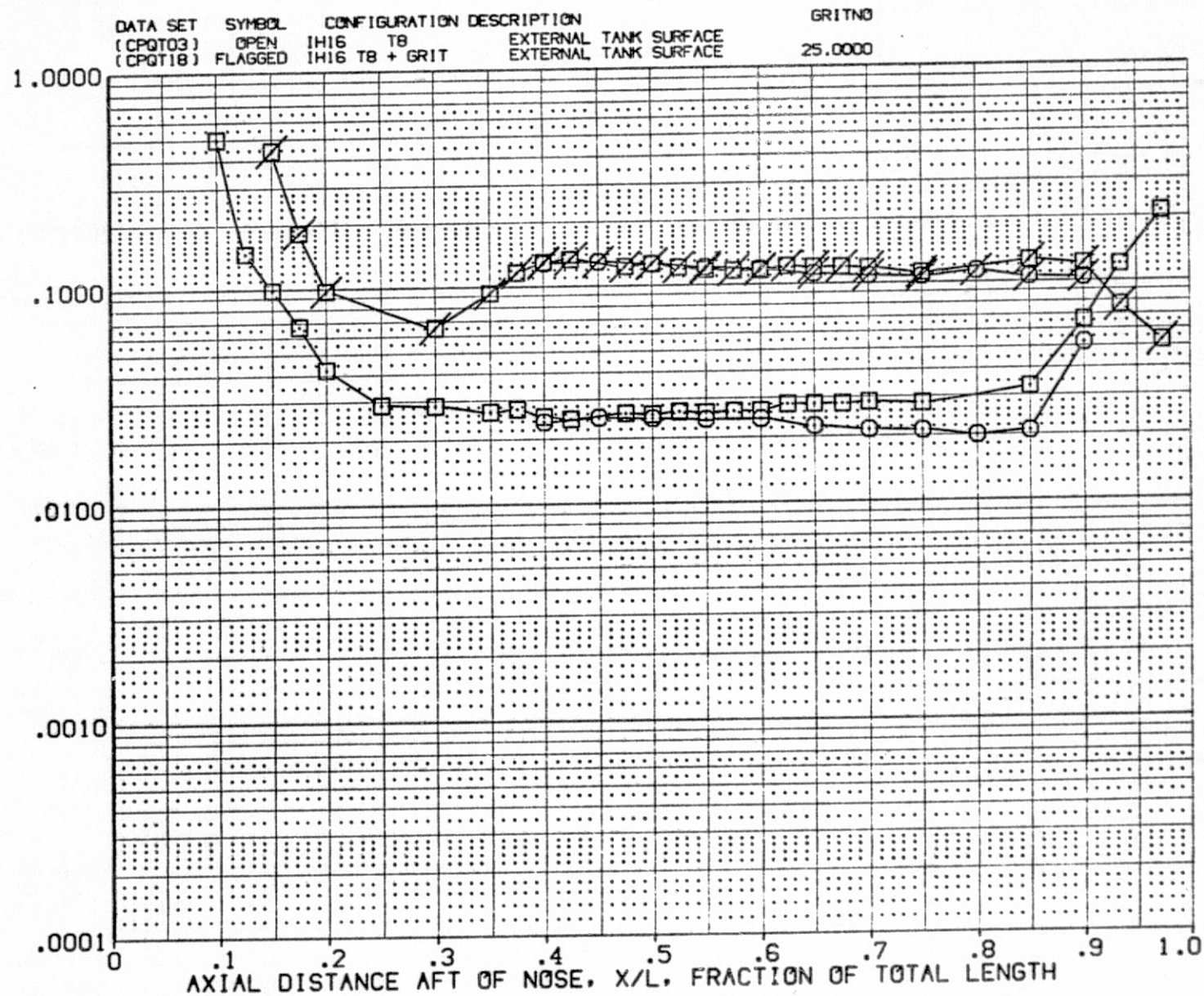


FIG. 35 ET ALONE

GRIT EFFECT



SYMBOL PHI HAW/HT RN/L  
 ○ .000  
 □ 45.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $H/H_{REF}$

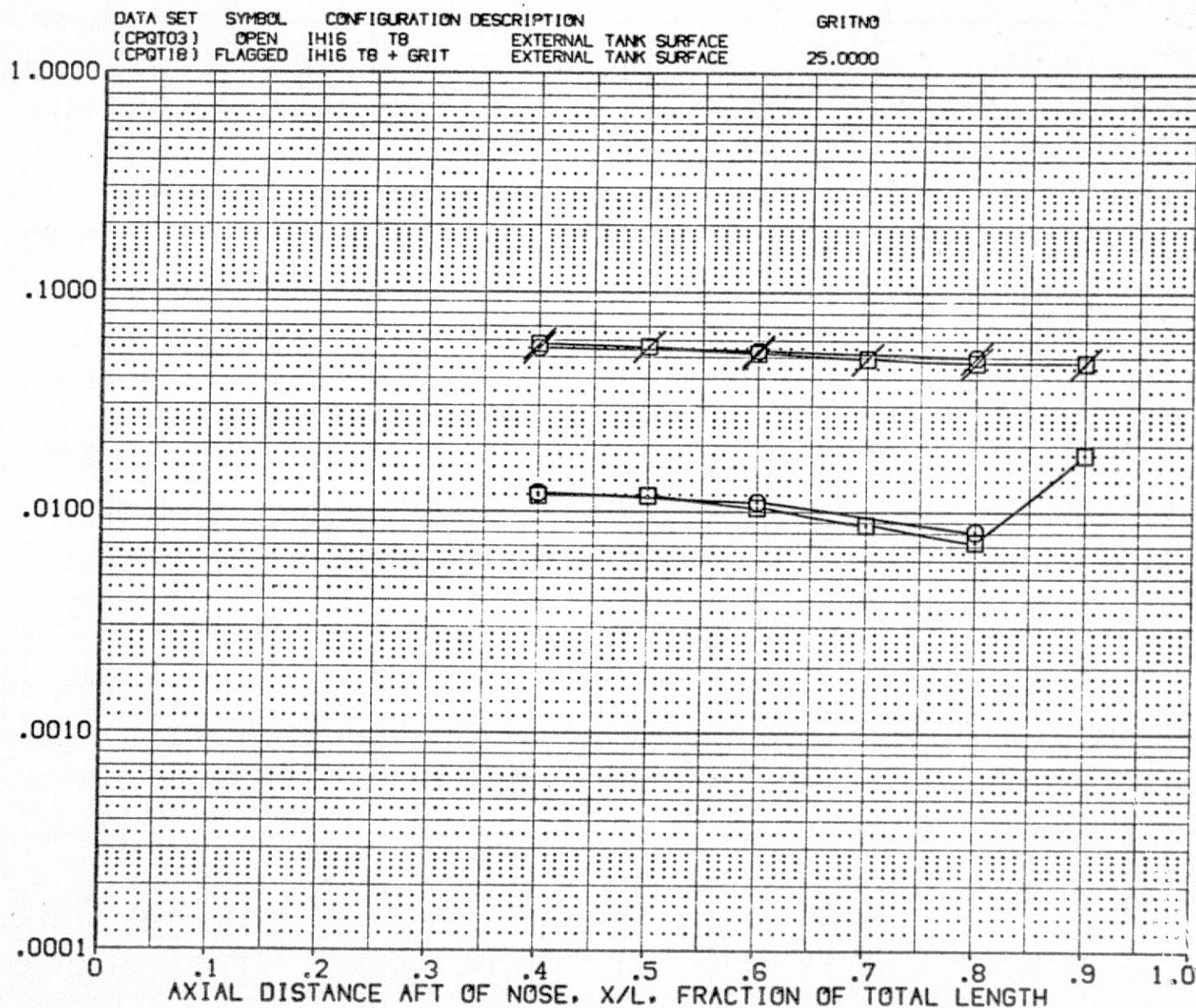


FIG. 35 ET ALONE

GRIT EFFECT

SYMBOL	PHI	HAW/HT	RN/L
○	67.500	.900	4.640
□	90.000		

PARAMETRIC VALUES	
MACH	3.700 ALPHA .000
BETA	.000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF. H/HREF

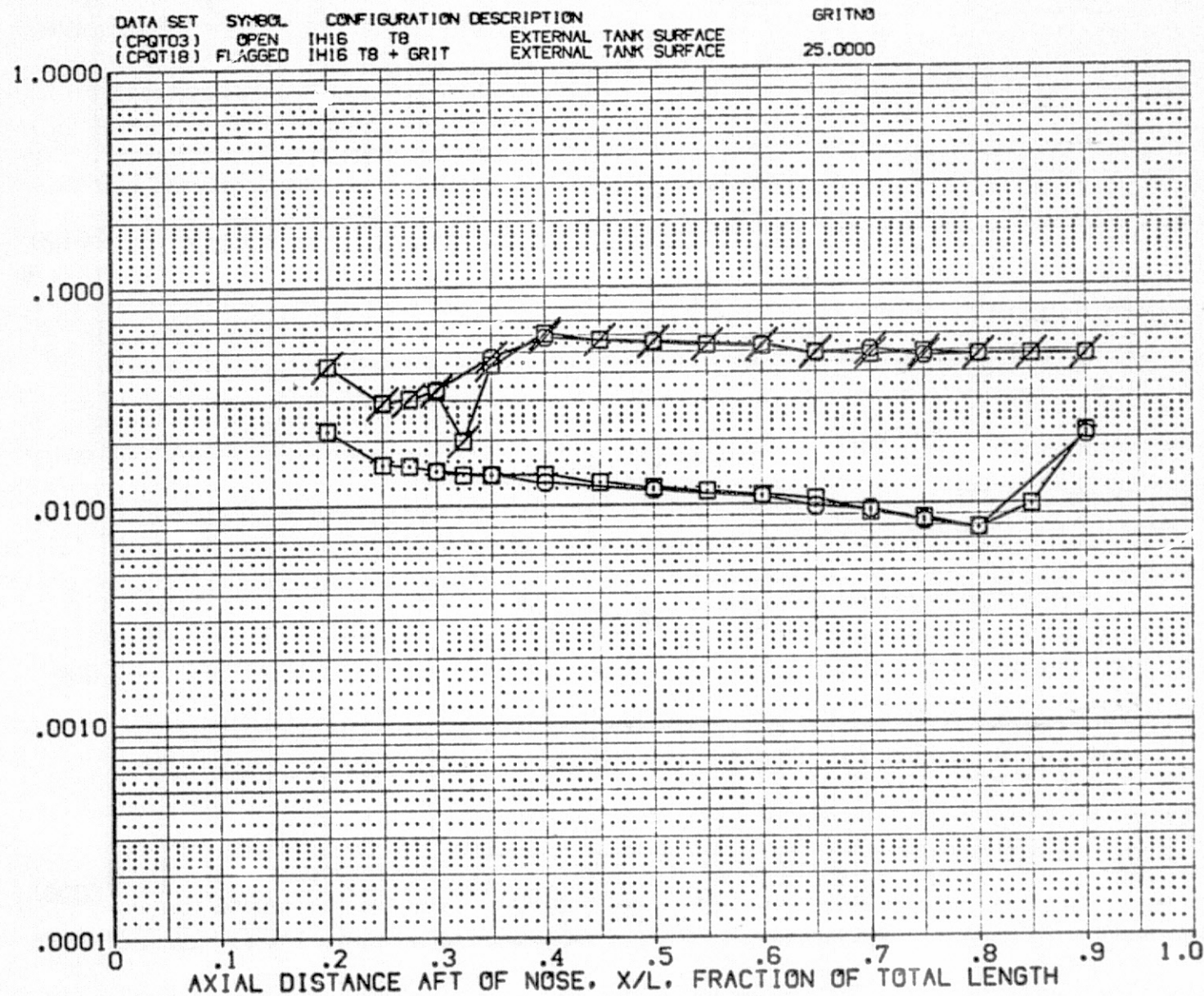


FIG. 35 ET ALONE

GRIT EFFECT



SYMBOL PHI HAV/HT RN/L  
 ○ 112.500 .900 4.640  
 □ 135.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

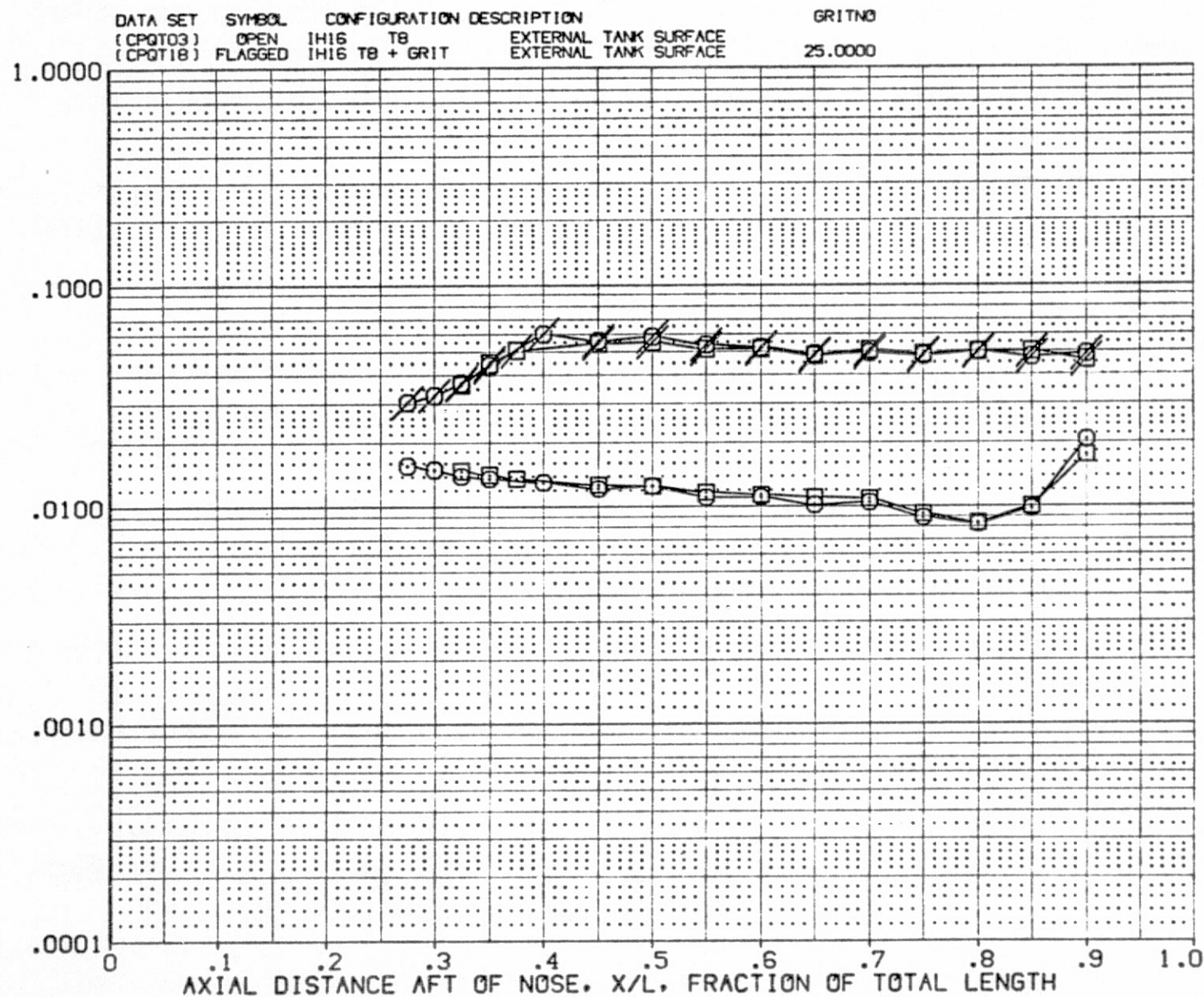
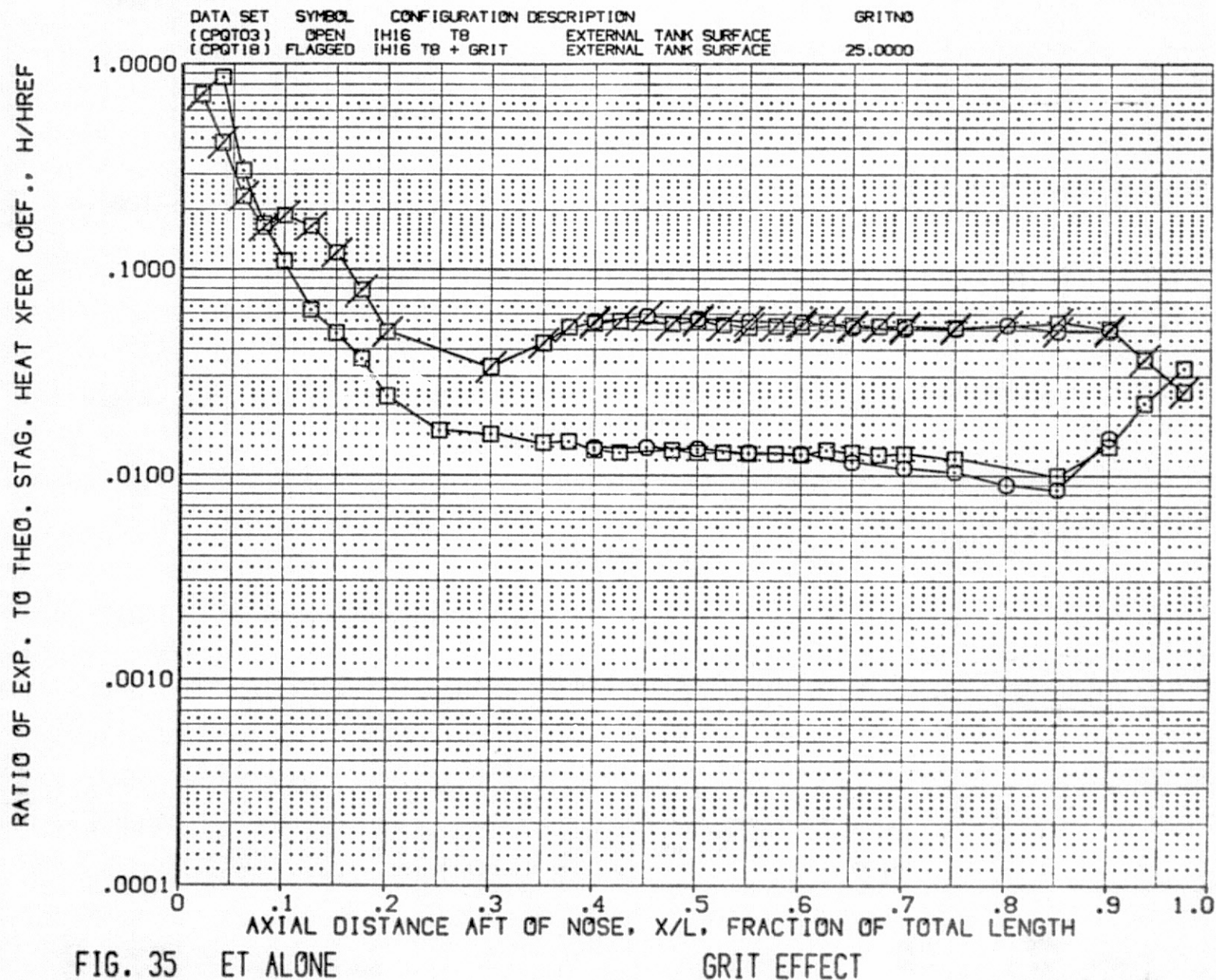


FIG. 35 ET ALONE

GRIT EFFECT

SYMBOL PHI HAW/HT RN/L  
 ○ 157.500 .900 4.640  
 □ 180.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000





SYMBOL PHI HAV/HT RN/L  
 ○ .000 1.000 4.640  
 □ 45.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

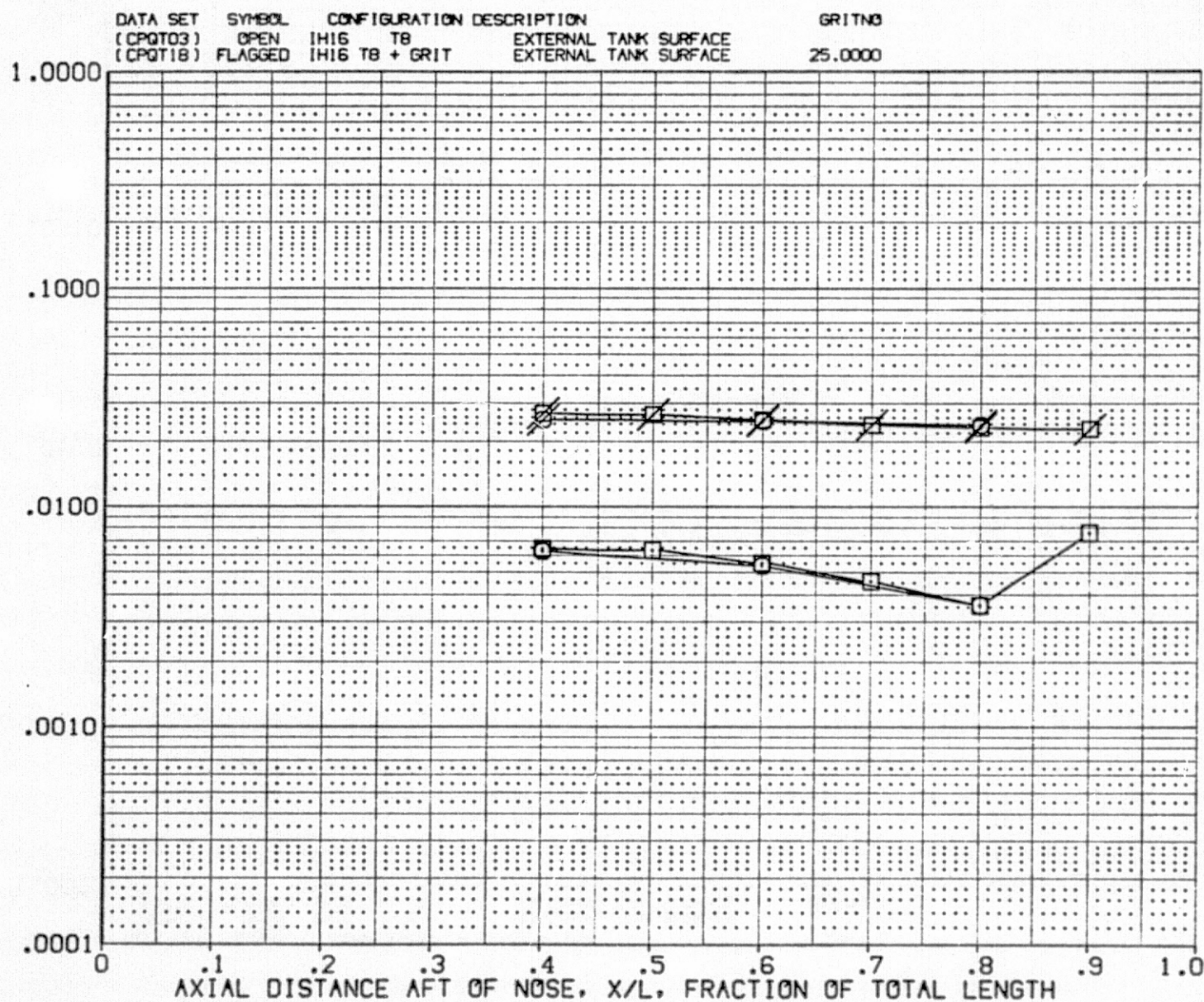
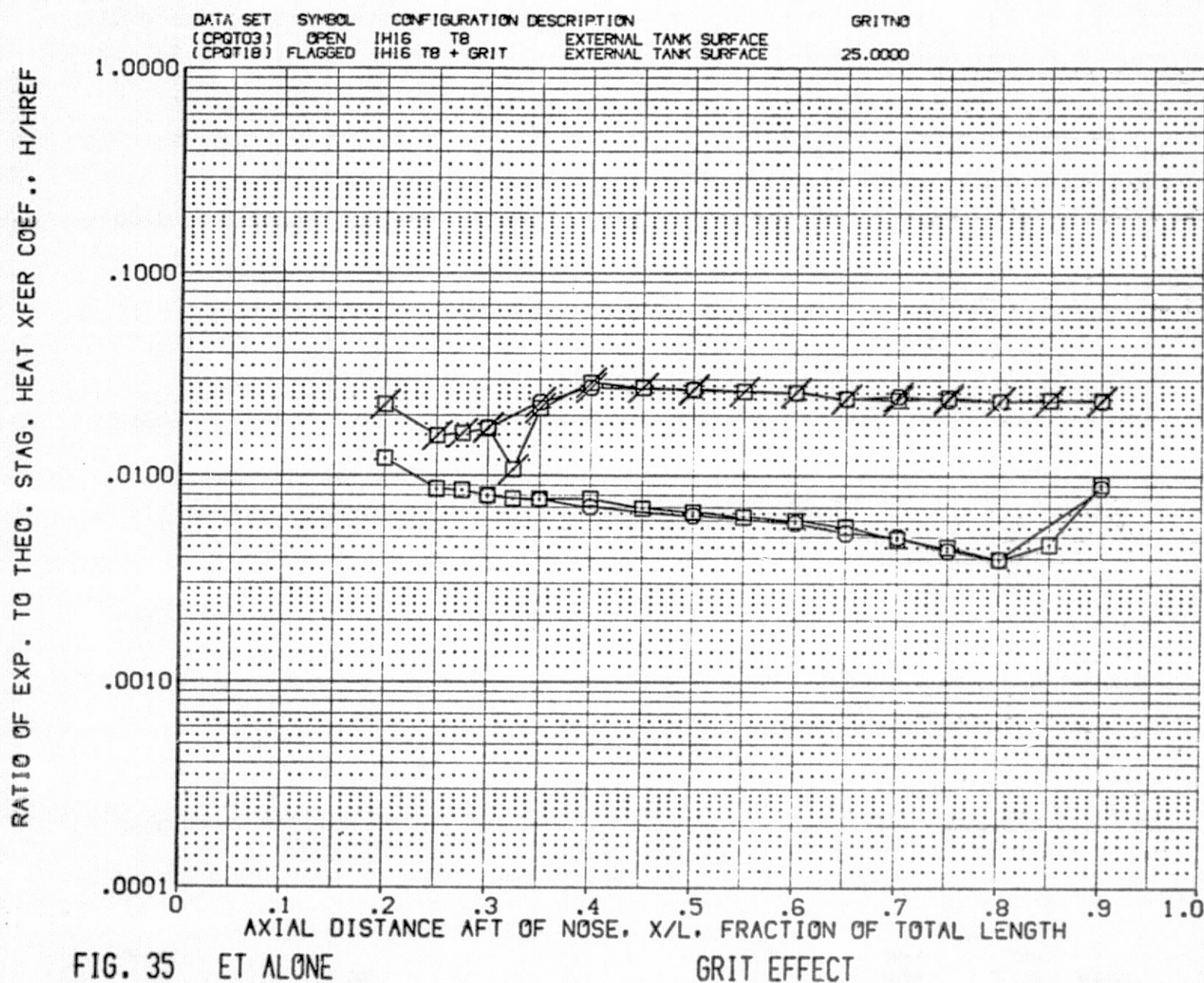


FIG. 35 ET ALONE

GRIT EFFECT

SYMBOL PHI HAV/HT RN/L  
 ○ 67.500 1.000 4.640  
 □ 90.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000





SYMBOL PHI HAV/HT RN/L  
 ○ 112.500 1.000 4.640  
 □ 135.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

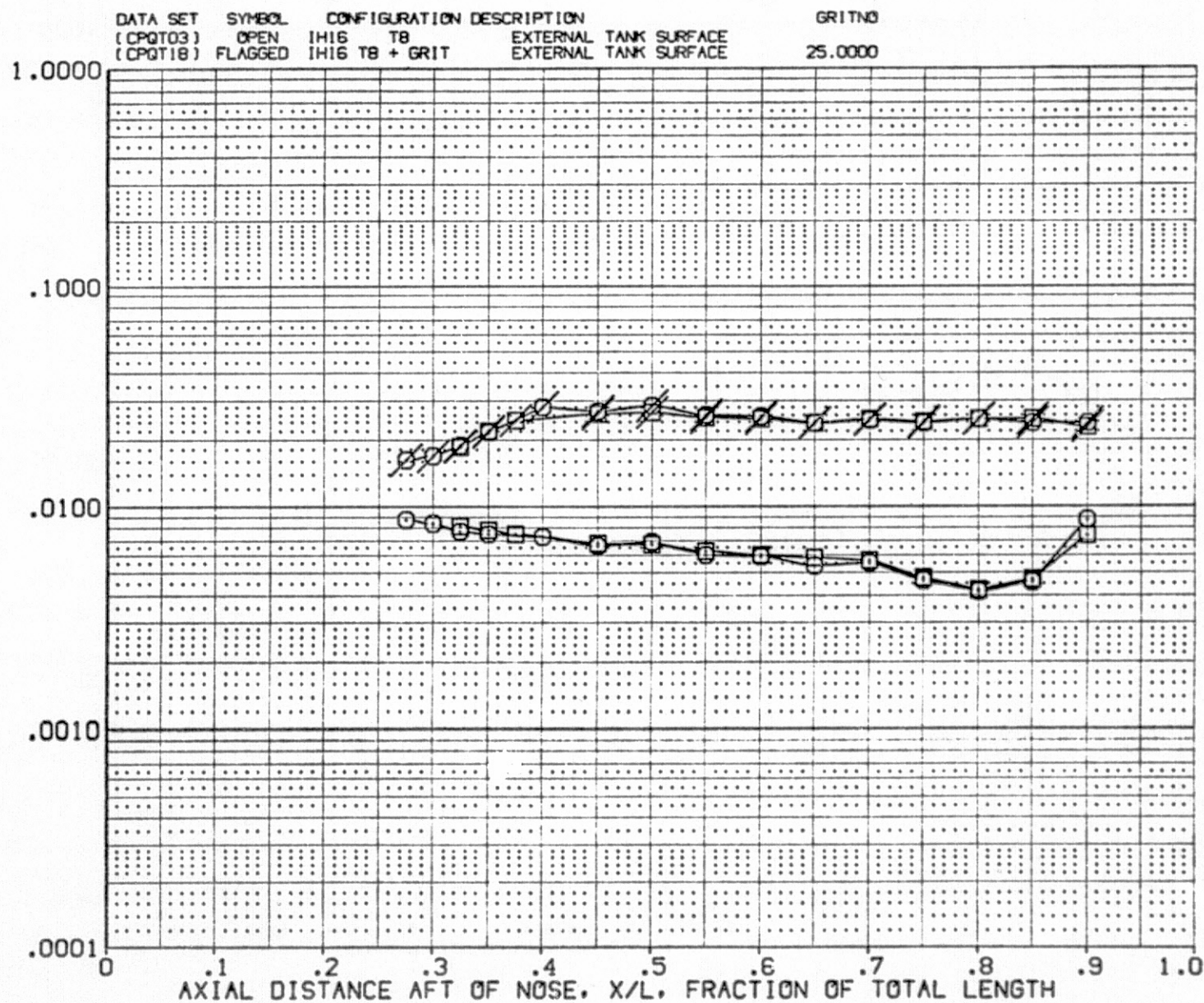


FIG. 35 ET ALONE

GRIT EFFECT

SYMBOL PHI HAW/HT RN/L  
 ○ 157.500 1.000 4.640  
 □ 180.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

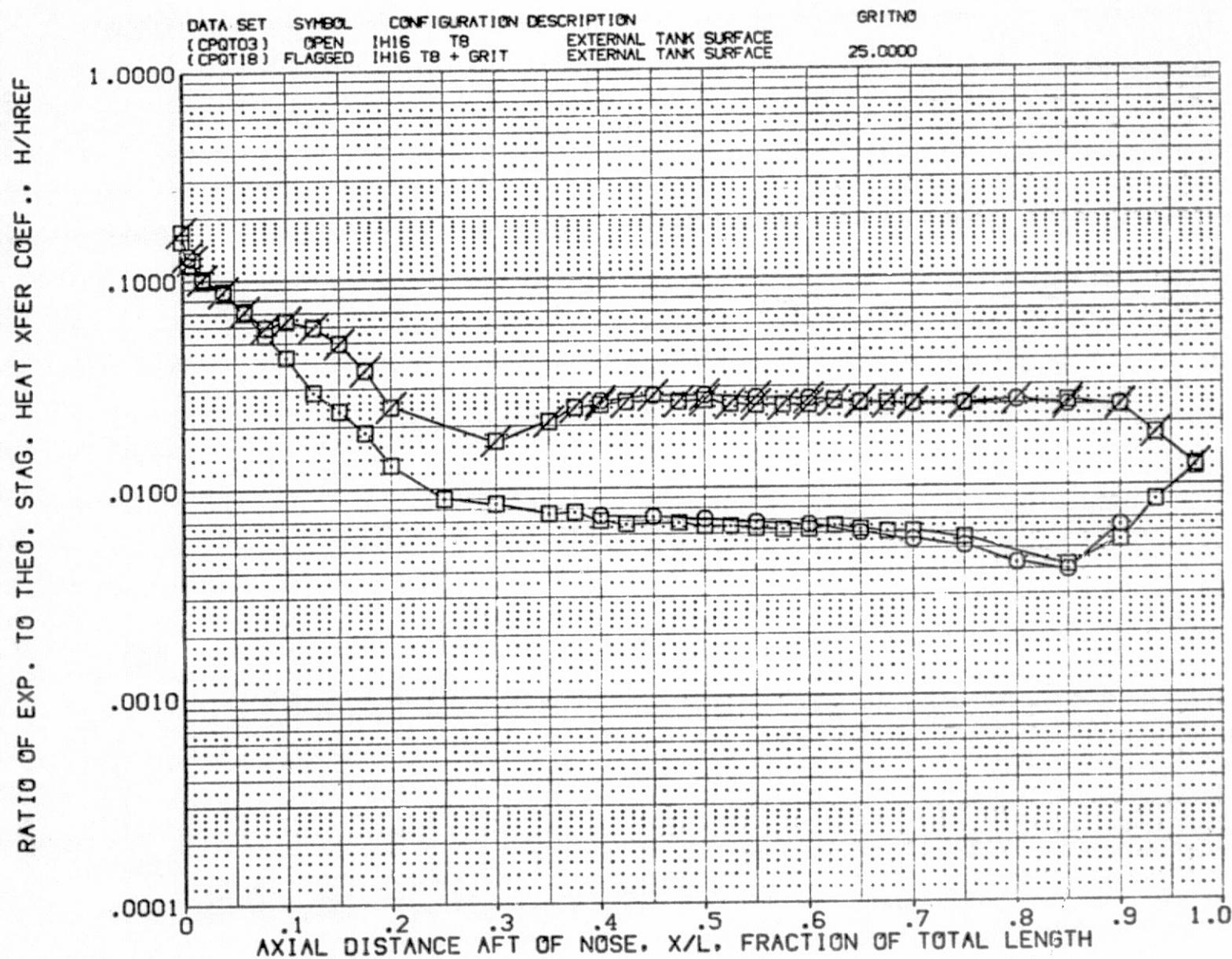


FIG. 35 ET ALONE

GRIT EFFECT



IH16 089B + T8 + S6 EXTERNAL TANK SURFACE

(CPQT01)

SYMBOL	RN/L	PHI	HAW/HT
○	1.930	.000	.900
□	4.570		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

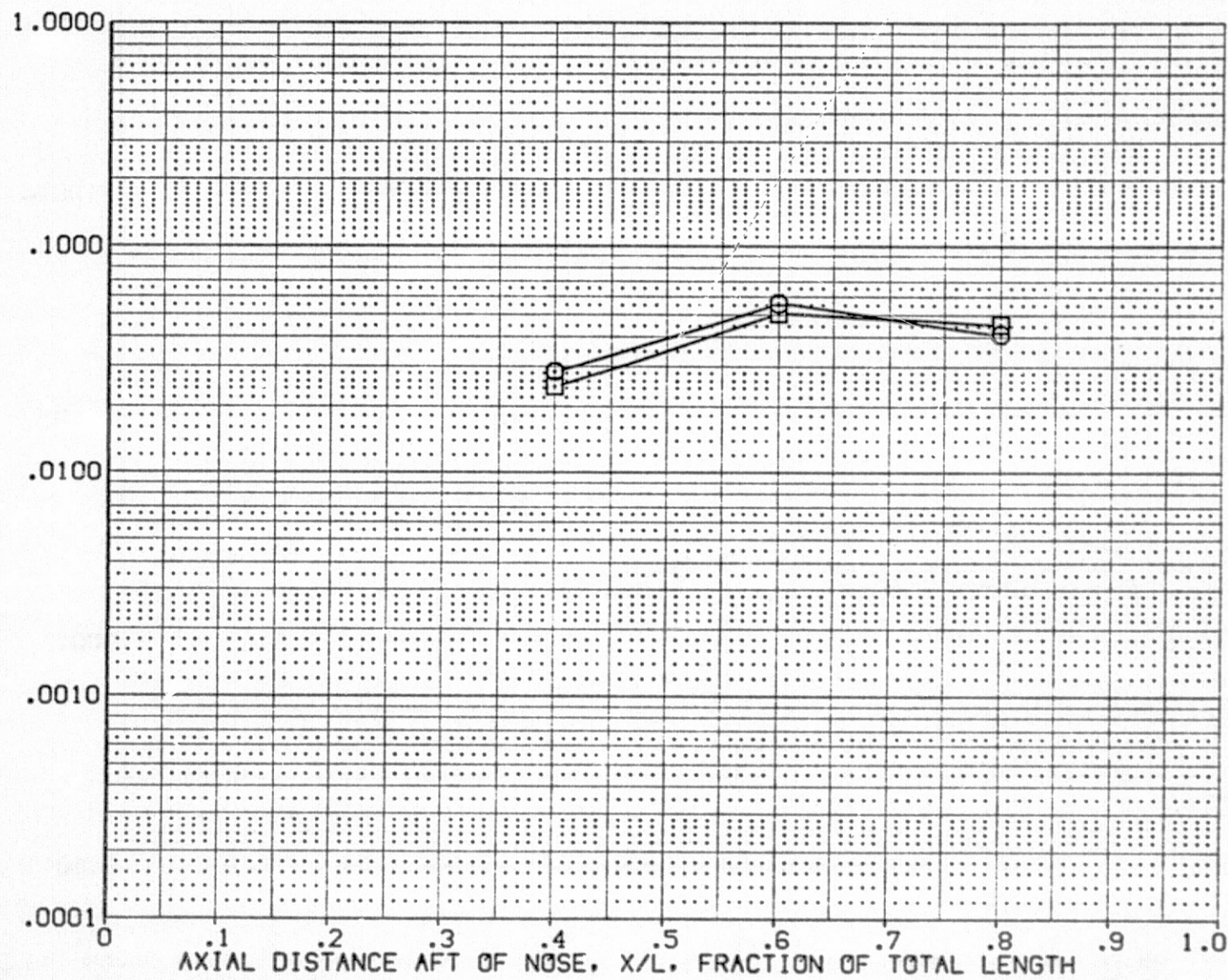


FIG. 36 INTEGRATED VEHICLE - ET SURFACE RN VARIATION ALPHA = 0 DH = .175

SYMBOL  
○  
□RN/L  
1.930  
4.570PHI  
45.000HAW/HT  
.900MACH  
BETA

PARAMETRIC VALUES

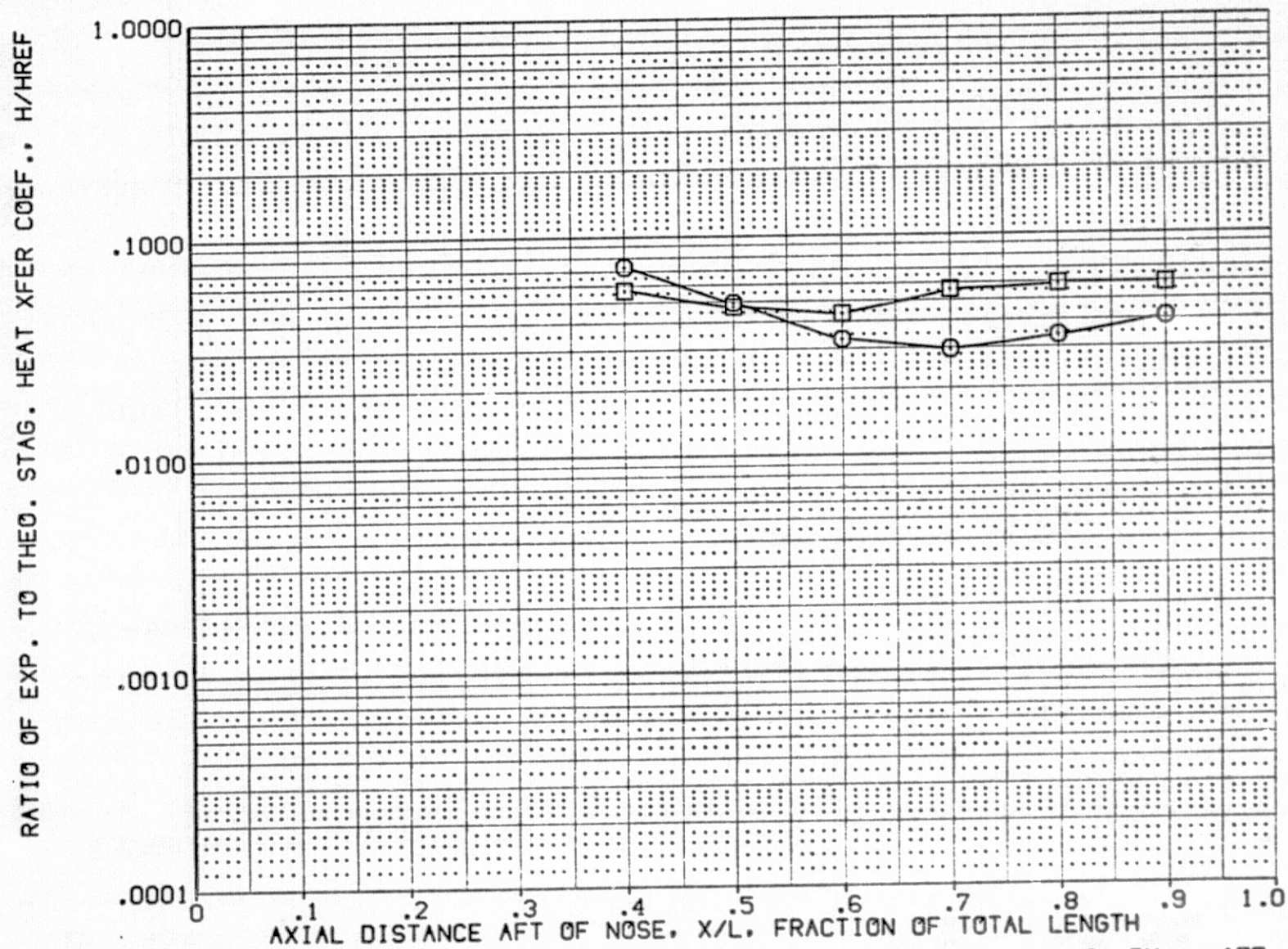
3.700  
.000ALPHA  
DELTAH.000  
.175

FIG. 36 INTEGRATED VEHICLE - ET SURFACE RN VARIATION ALPHA = 0 DH = .175



IH16 089B + T8 + S6 EXTERNAL TANK SURFACE

(CPQT01)

SYMBOL	RN/L	PH <sup>1</sup>	HAW/HT
○	1.930	67.500	.900
□	4.570		

PARAMETRIC VALUES		
MACH	ALPHA	DELTAH
3.700	.000	.000
BETA	.000	.175

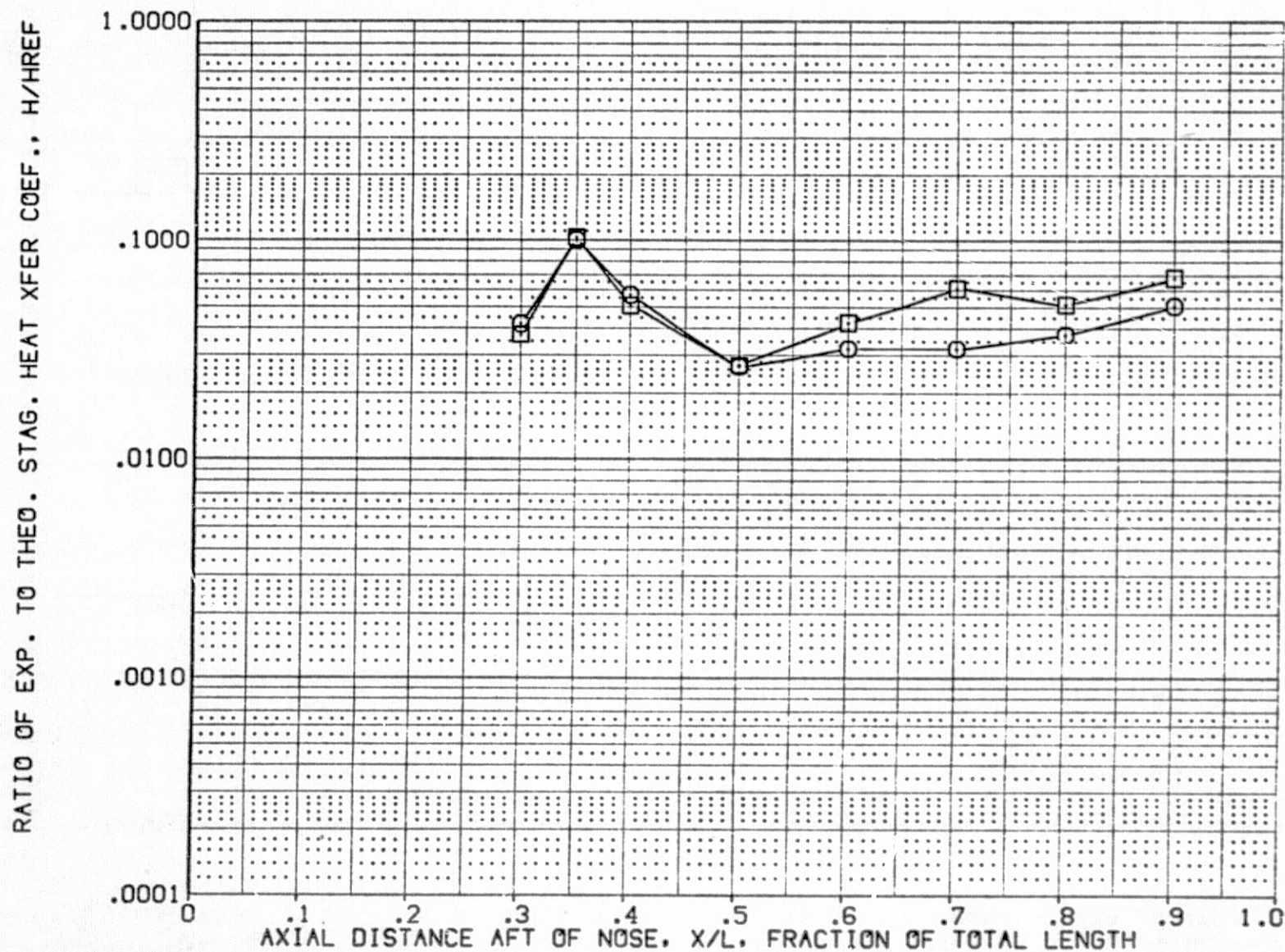


FIG. 36 INTEGRATED VEHICLE - ET SURFACE RN VARIATION ALPHA = 0 DH = .175

SYMBOL	RN/L	PHI	HAV/HT
○	1.930	90.000	.900
□	4.570		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

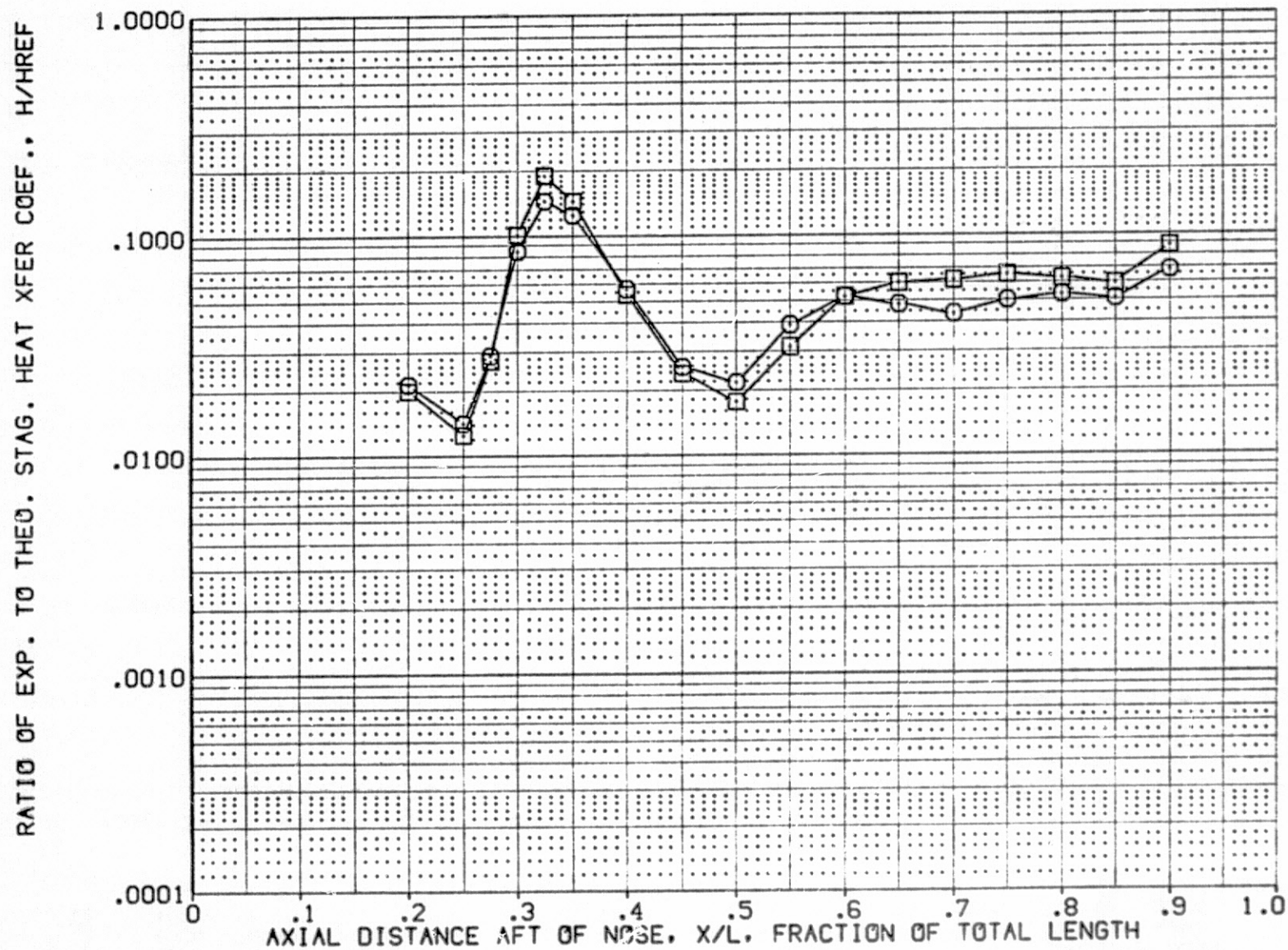


FIG. 36 INTEGRATED VEHICLE - ET SURFACE RN VARIATION ALPHA = 0 DH = .175



IH16 089B + T8 + S6

EXTERNAL TANK SURFACE

(CPQT01)

SYMBOL	RM/L	PHI	PAW/HT
○	1.930	112.500	.900
□	4.570		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

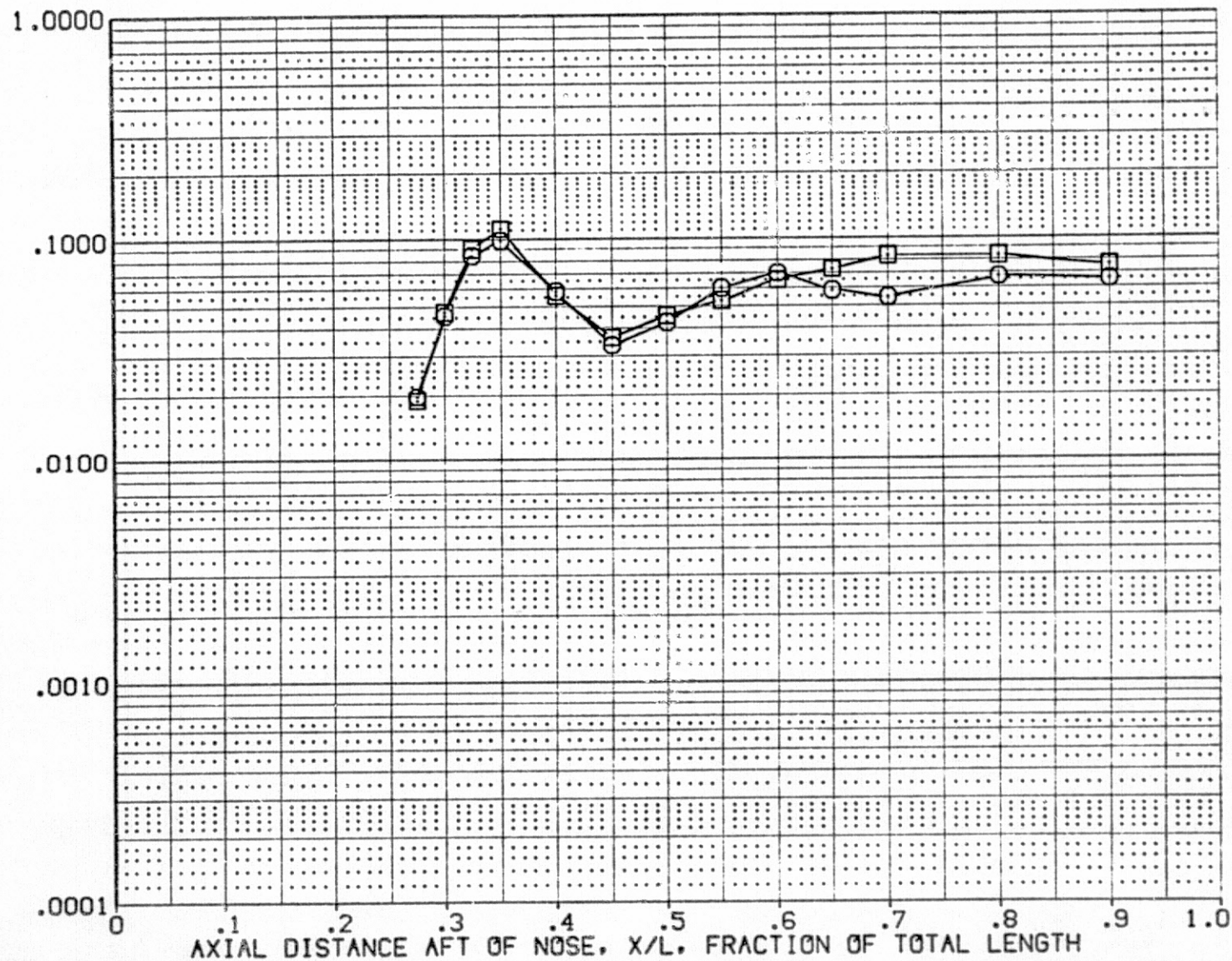


FIG. 36 INTEGRATED VEHICLE - ET SURFACE RN VARIATION ALPHA = 0 DH = .175

SYMBOL	RN/L	PHI	HAW/HT
○	1.930	135.000	.900
□	4.570		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

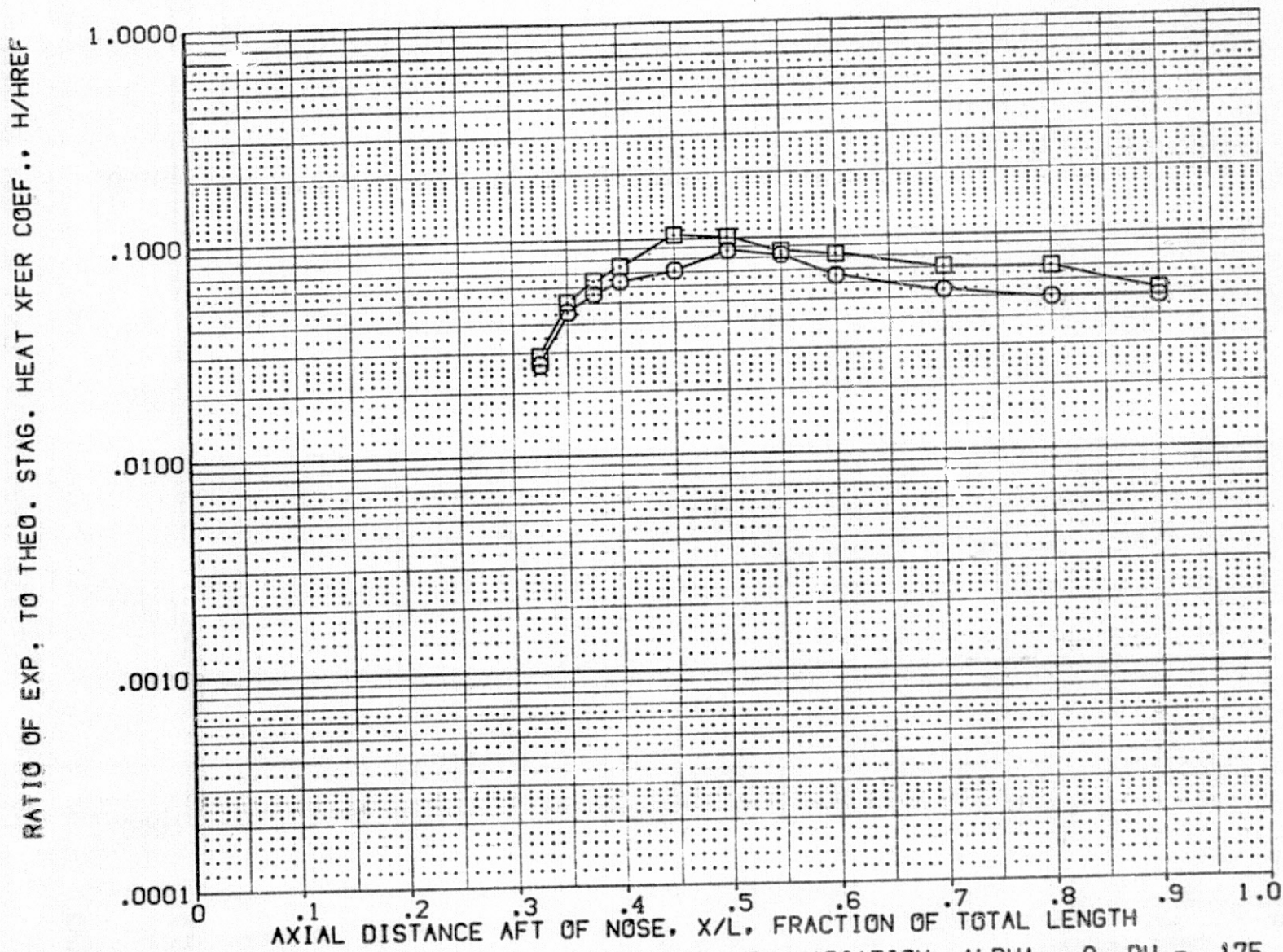


FIG. 36 INTEGRATED VEHICLE - ET SURFACE RN VARIATION ALPHA = 0 DH = .175



IH16 089B + T8 + S6 EXTERNAL TANK SURFACE

(CPQT01)

SYMBOL  
 ○  
 □  
 RN/L  
 1.930  
 4.570  
 PHI  
 157.500  
 HAV/HT  
 .900

PARAMETRIC VALUES  
 MACH  
 3.700  
 BETA  
 .000  
 ALPHA  
 DELTAH  
 .000  
 .175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

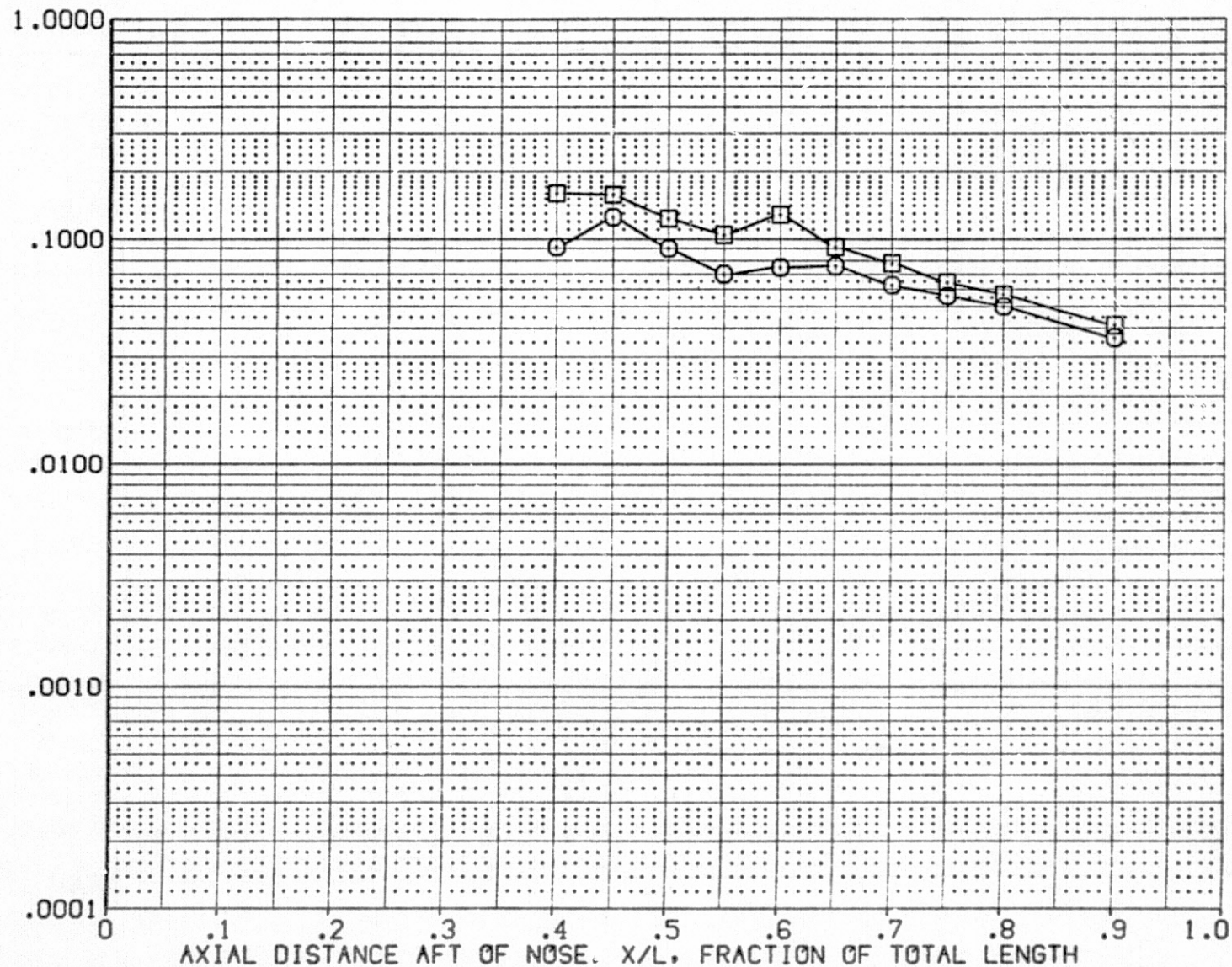


FIG. 36 INTEGRATED VEHICLE - ET SURFACE RN VARIATION ALPHA = 0 DH = .175

SYMBOL    RN/L    PHI    HAW/HT  
○    1.930    180.000    .900  
□    4.570

PARAMETRIC VALUES  
MACH    3.700    ALPHA    .000  
BETA    .000    DELTAH    .175

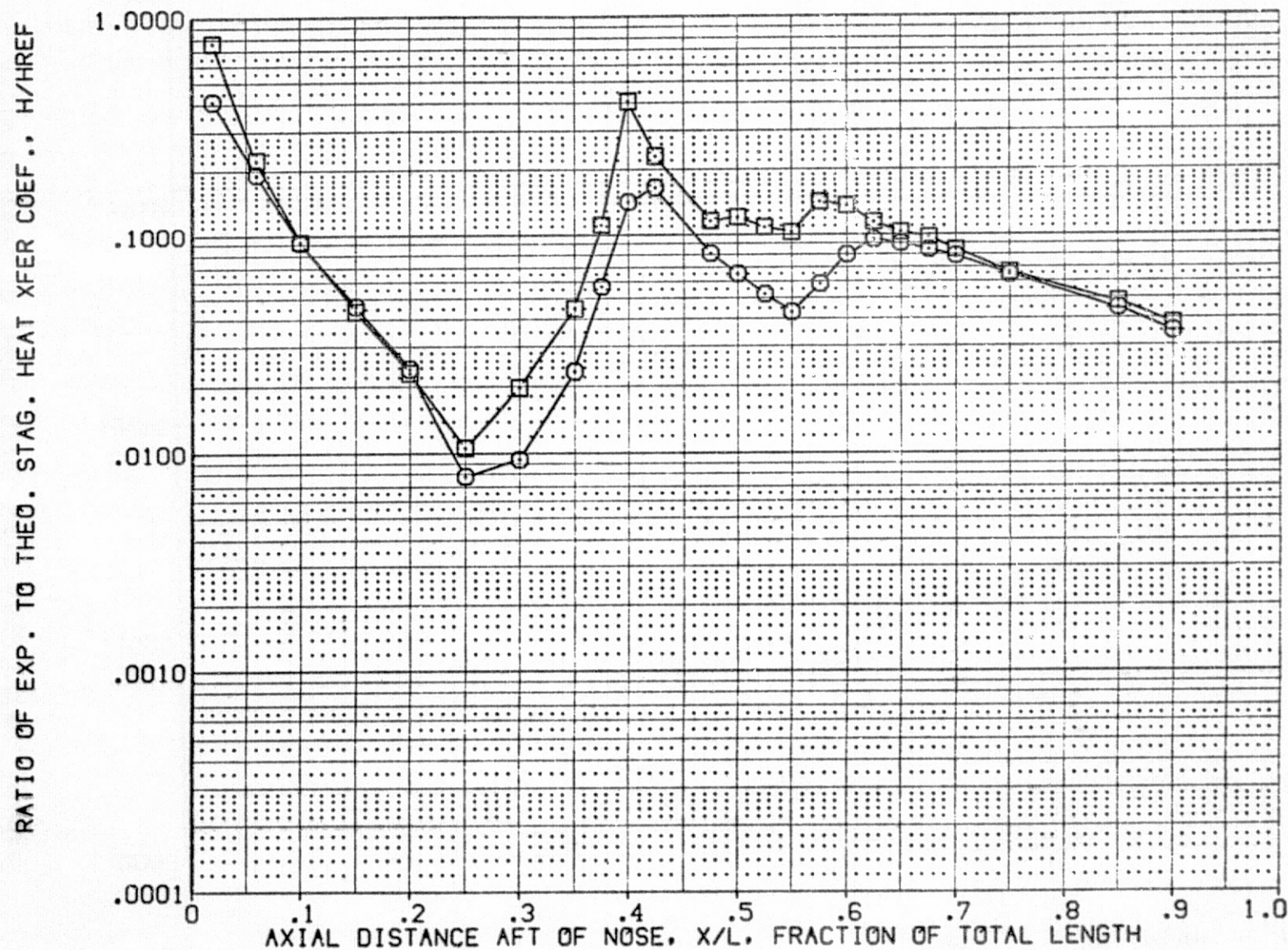


FIG. 36 INTEGRATED VEHICLE - ET SURFACE RN VARIATION ALPHA = 0 DH = .175



SYMBOL

○  
□

RN/L

1.990  
4.560

PHI

.000

HAW/HT

.900

MACH

PARAMETRIC VALUES

3.700

ALPHA

-5.000

BETA

.000

DELTAH

.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

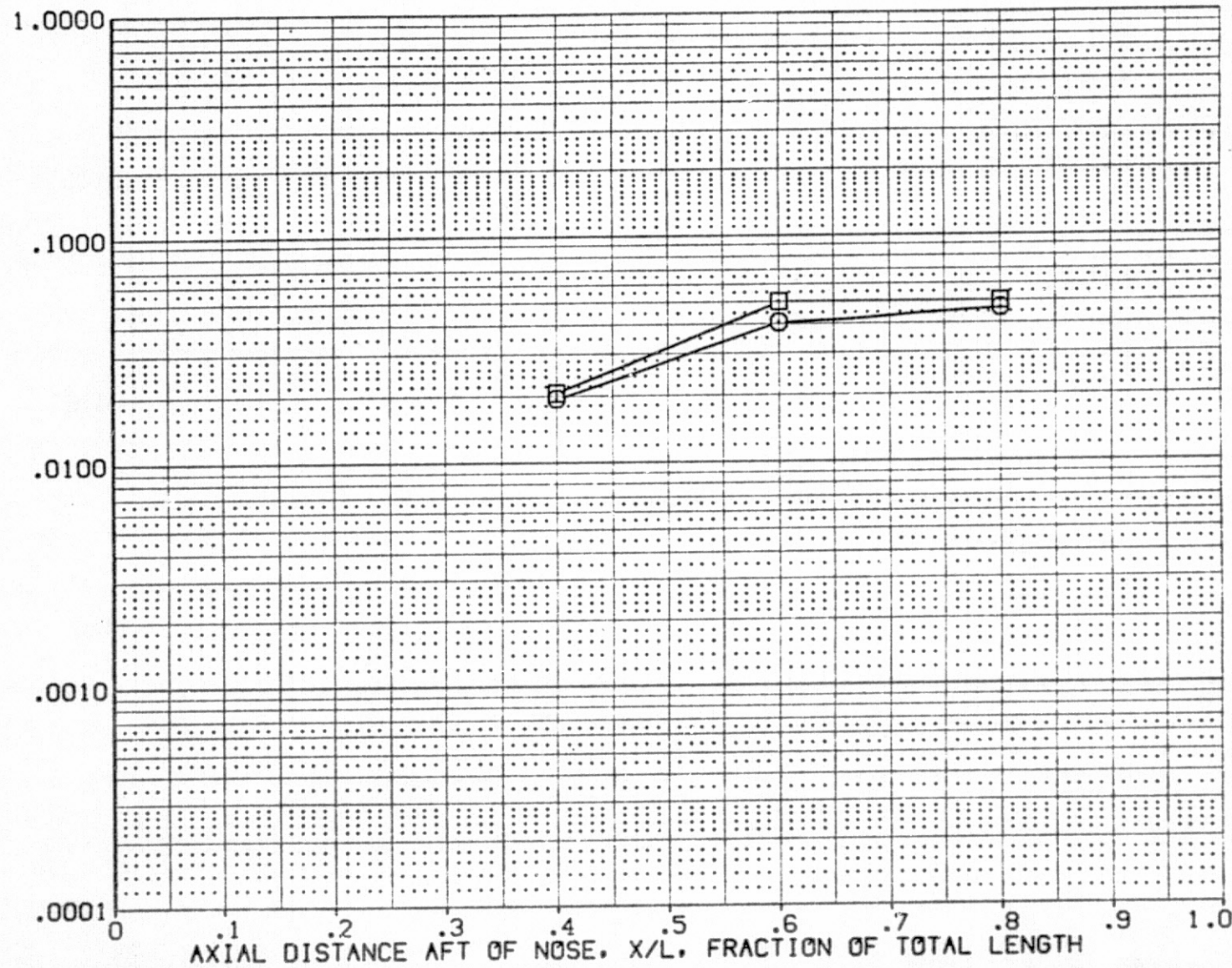


FIG. 37 INTEGRATED VEHICLE - ET SURFACE RN VARIATION ALPHA = -5 DH = .175

SYMBOL	RN/L	PHI	HAW/HT
○	1.990	45.000	.900
□	4.560		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	-5.000
BETA	.000	DELTAH	.175

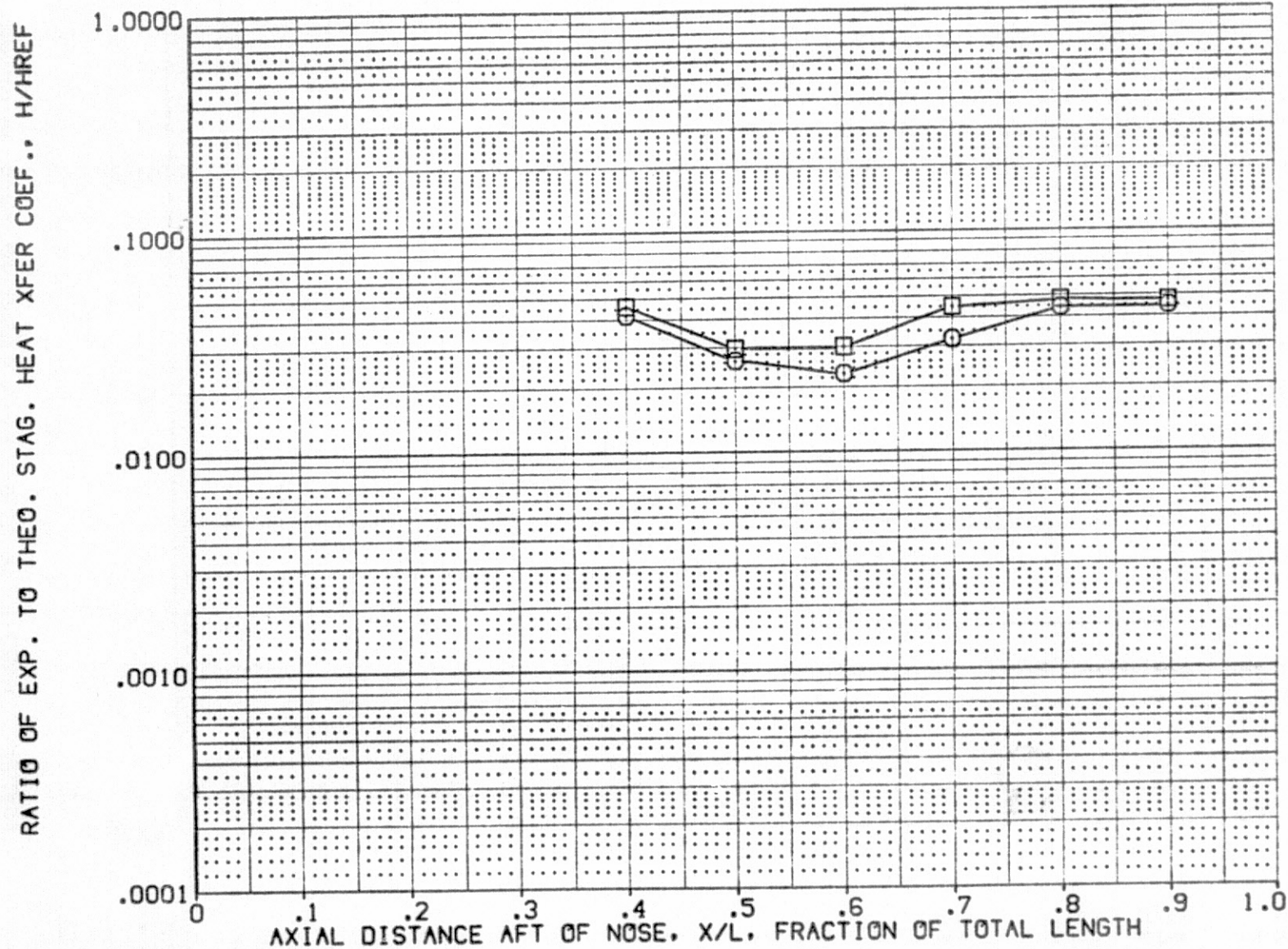


FIG. 37 INTEGRATED VEHICLE - ET SURFACE RN VARIATION ALPHA = -5 DH = .175



IH16 089B + T8 + S6 EXTERNAL TANK SURFACE

(CPQT02)

SYMBOL	RN/L	PHI	HAW/HT
○	1.990	67.500	.900
□	4.560		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
ALPHA	-5.000
DELTAH	.175

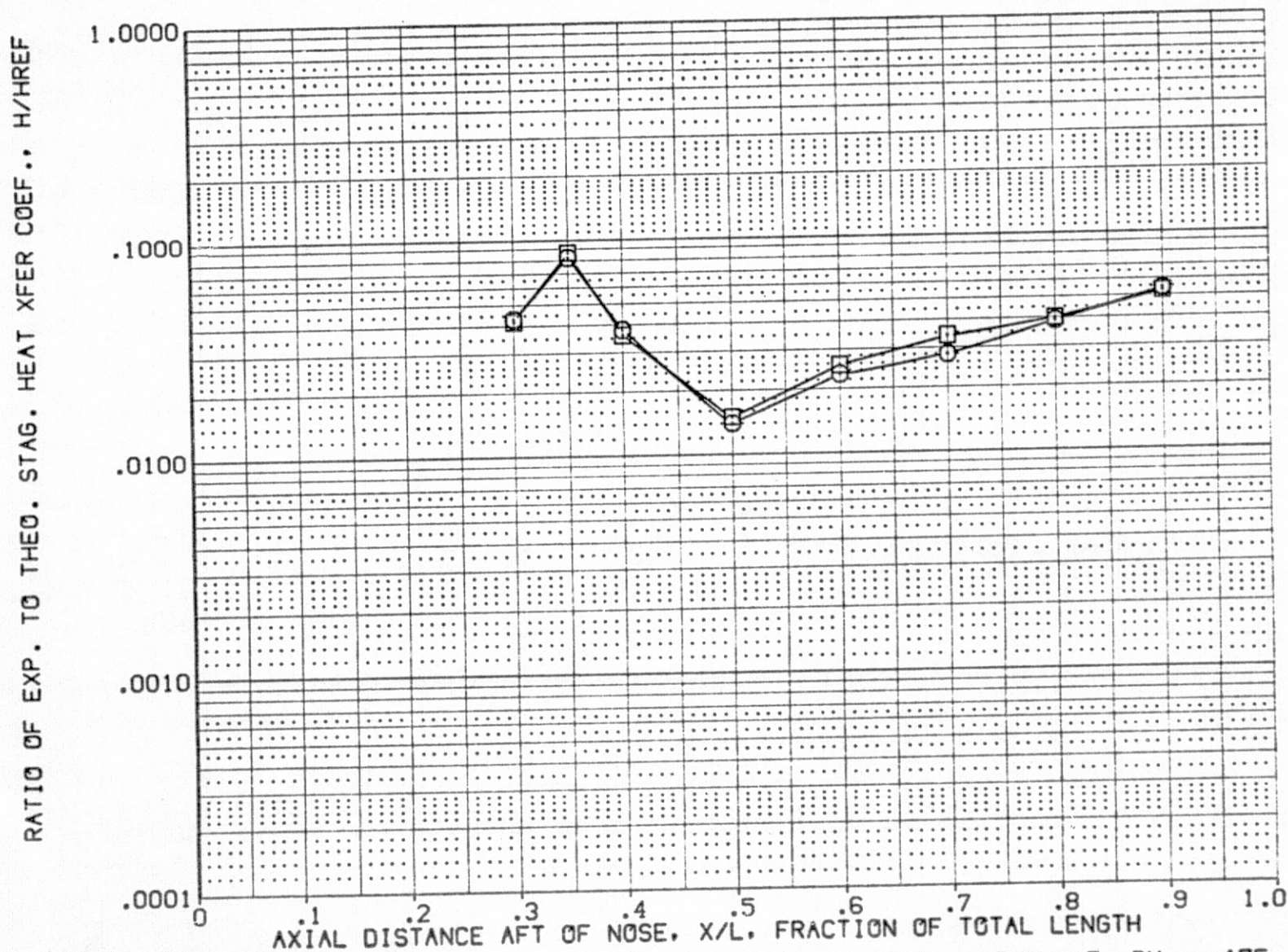


FIG. 37 INTEGRATED VEHICLE - ET SURFACE RN VARIATION ALPHA = -5 DH = .175

SYMBOL	RN/L	PHI	HAW/HT
○	1.990	90.000	.900
□	4.560		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
ALPHA	-5.000
DELTAH	.175

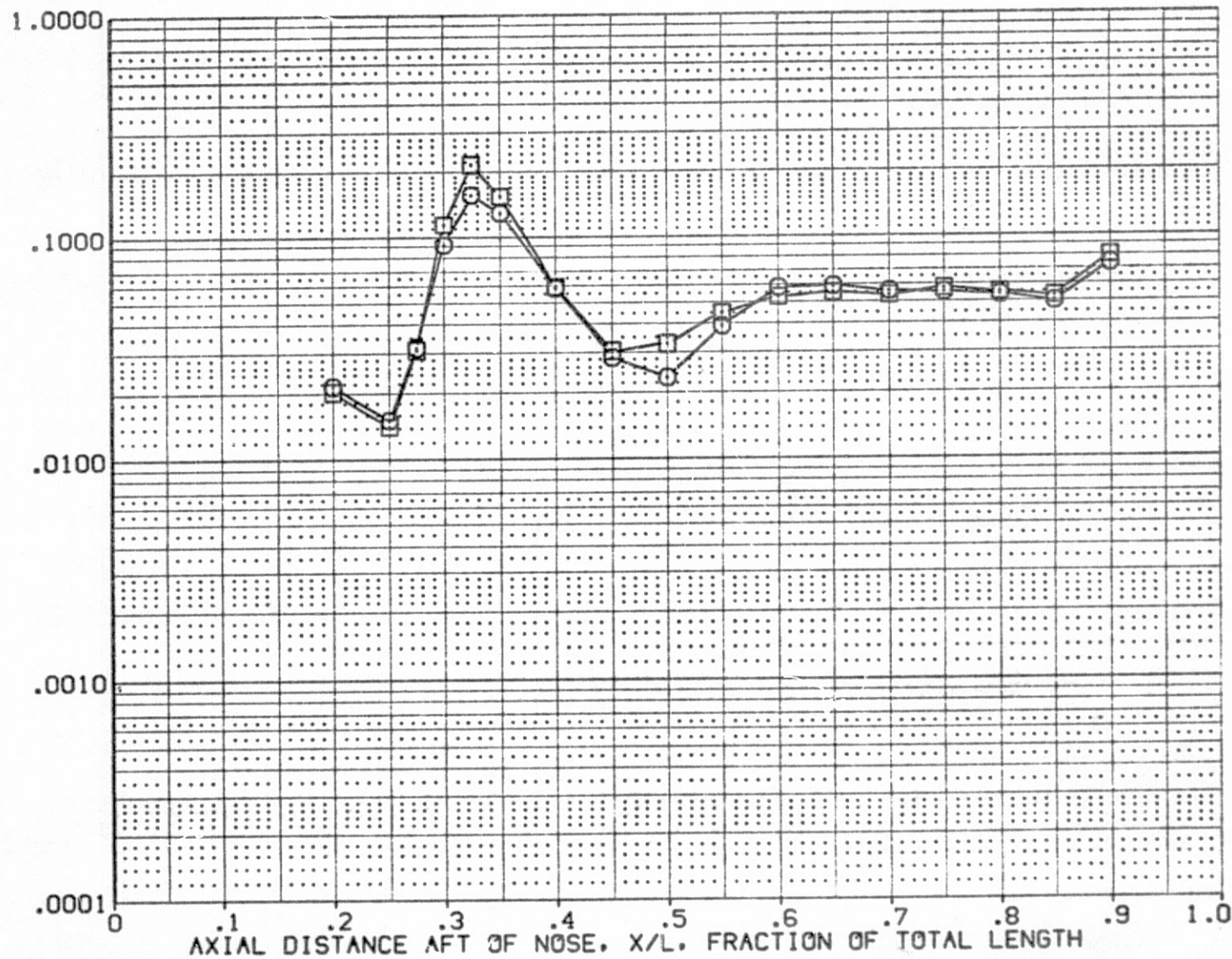
RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $H/H_{REF}$ 

FIG. 37 INTEGRATED VEHICLE - ET SURFACE RN VARIATION ALPHA = -5 DH = .175



IH16 089B + T8 + S6 EXTERNAL TANK SURFACE

(CPQT02)

SYMBOL	RN/L	PHI	HAV/HT
○	1.990	112.500	.900
□	4.560		

PARAMETRIC VALUES		
MACH	3.700	ALPHA -5.000
BETA	.000	DELTAH .175

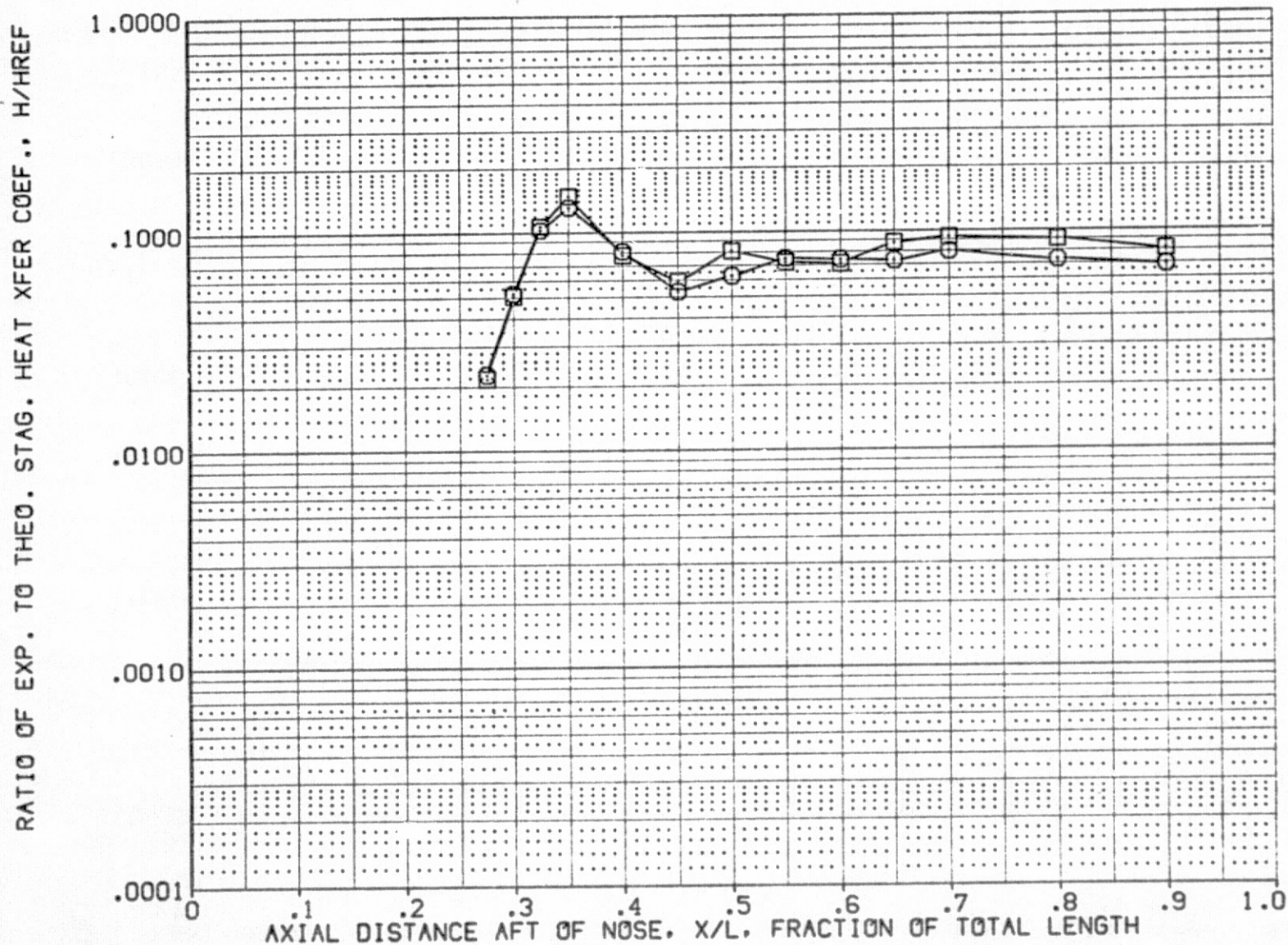


FIG. 37 INTEGRATED VEHICLE - ET SURFACE RN VARIATION ALPHA = -5 DH = .175

SYMBOL	RN/L	PHI	HAW/HT
○	1.990	135.000	.900
□	4.560		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	-5.000
BETA	.000	DELTAH	.175

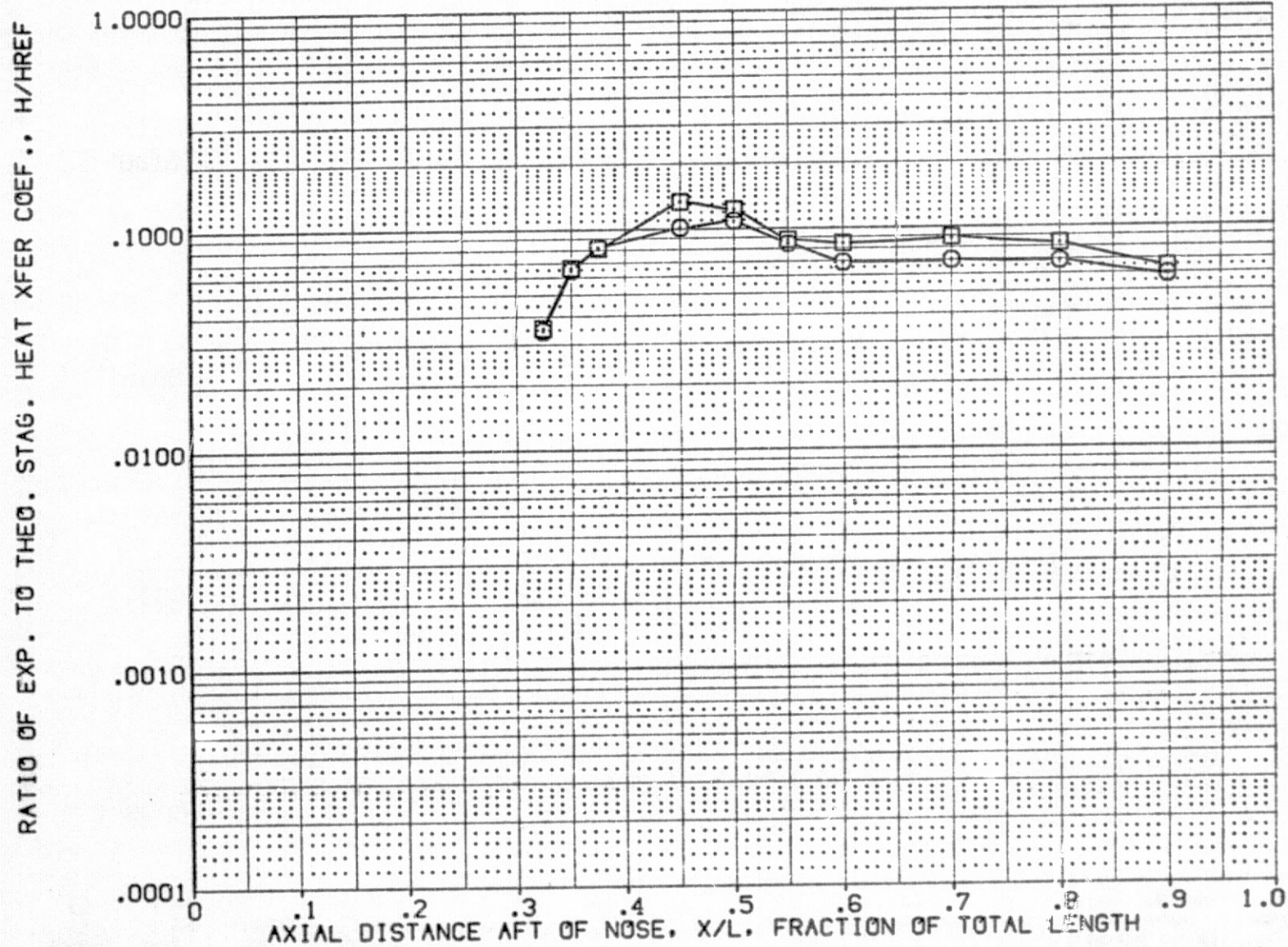


FIG. 37 INTEGRATED VEHICLE - ET SURFACE RN VARIATION ALPHA = -5 DH = .175



IH16 089B + T8 + S6 EXTERNAL TANK SURFACE

(CPQT02)

SYMBOL	RN/L	PHI	HAW/HT
○	1.990	157.500	.900
□	4.560		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	-5.000
BETA	.000	DELTAH	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

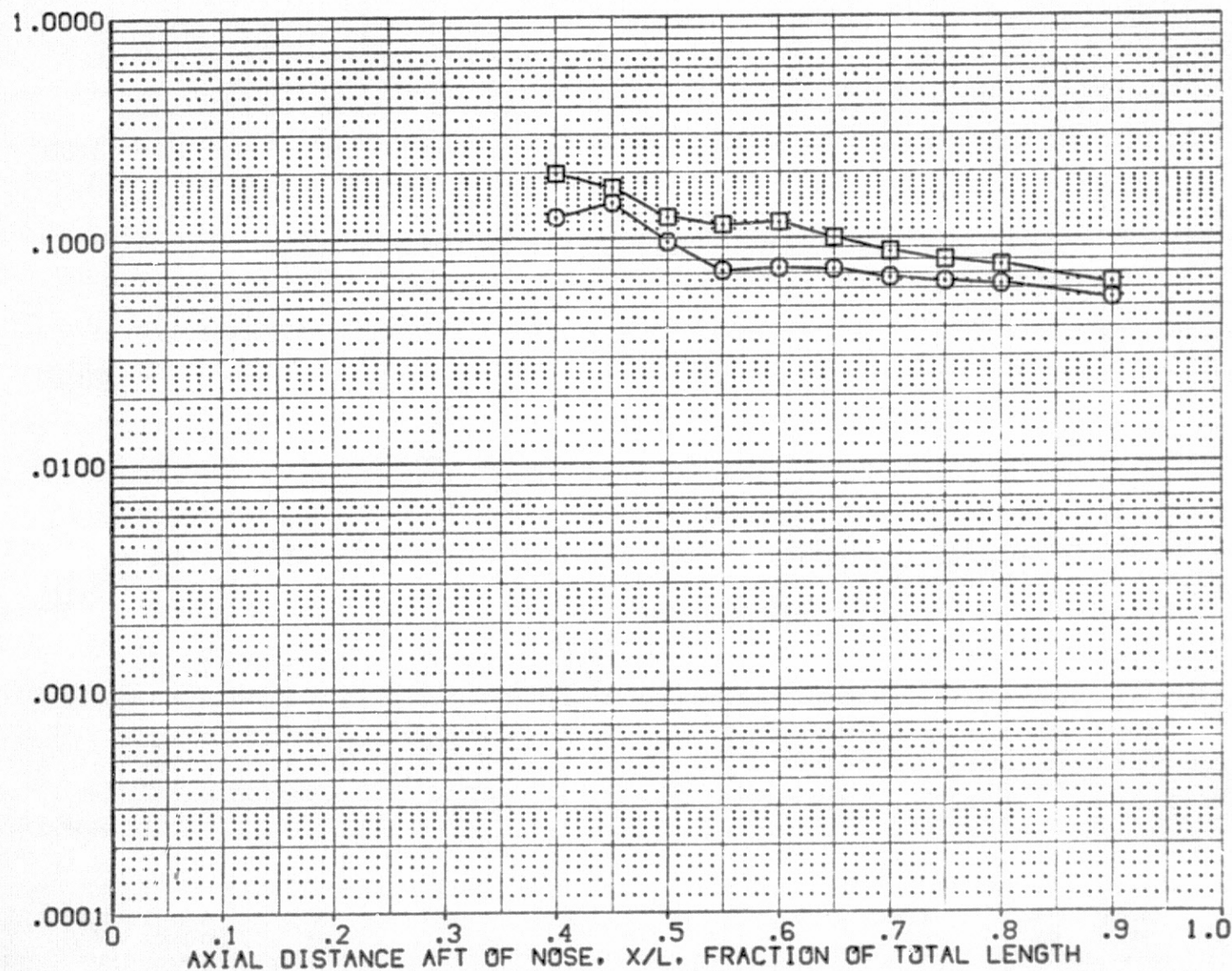


FIG. 37 INTEGRATED VEHICLE - ET SURFACE RN VARIATION ALPHA = -5 DH = .175

IH16 089B + T8 + S6 EXTERNAL TANK SURFACE

(CPQT02)

SYMBOL  
○  
□RN/L  
1.990  
4.560PHI  
180.000HAW/HT  
.900MACH  
BETA

PARAMETRIC VALUES

3.700  
.000ALPHA  
DELTAH-5.000  
.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

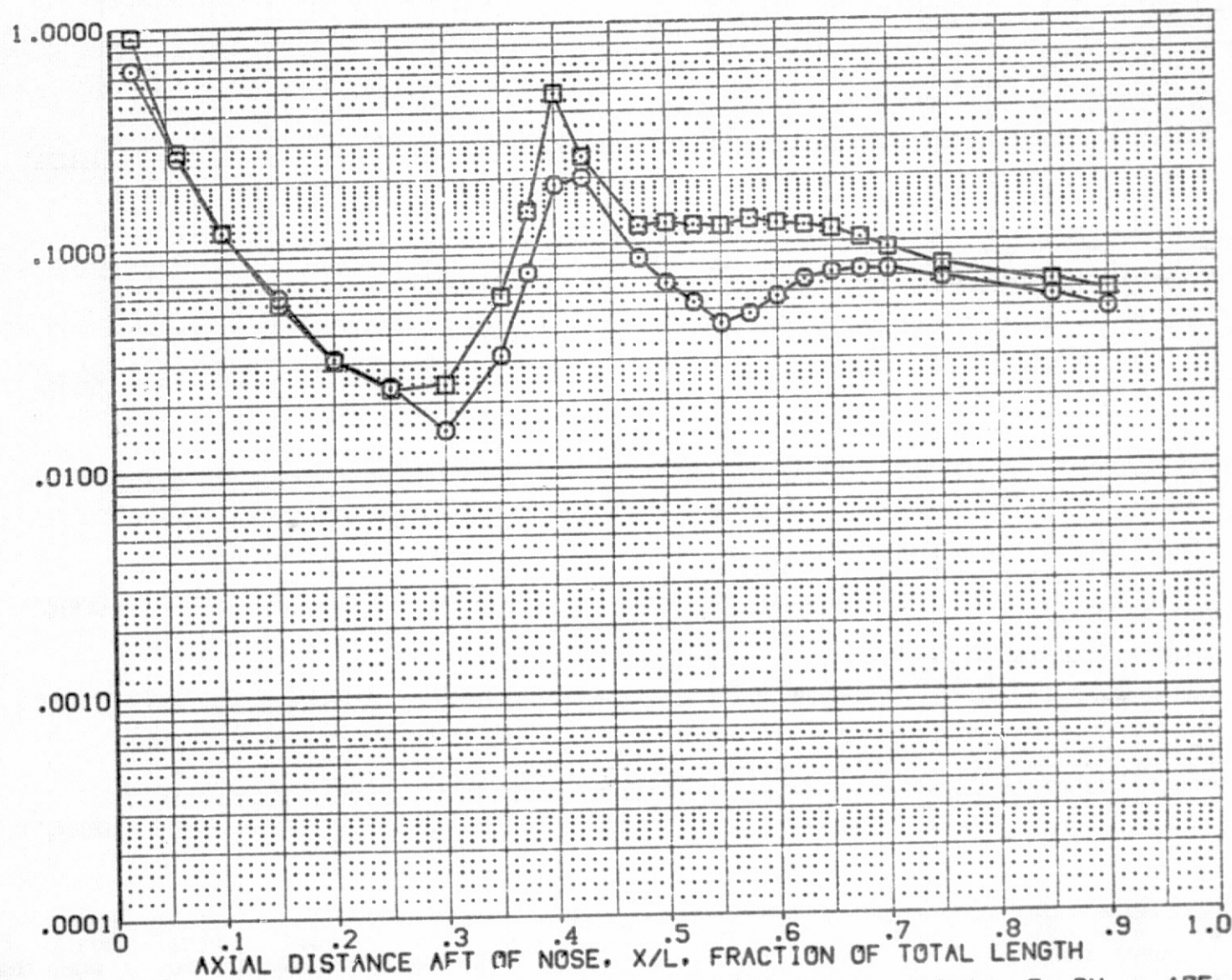


FIG. 37 INTEGRATED VEHICLE - ET SURFACE RN VARIATION ALPHA = -5 DH = .175



# IH16 089B + T8 + S6 EXTERNAL TANK SURFACE

(CPQT13)

SYMBOL  
○  
□

RN/L  
1.990  
4.550

PHI  
.000

HAY/HT  
.900

MACH  
BETA

PARAMETRIC VALUES  
3.700 ALPHA  
.000 DELTAH

.000  
.069

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.  $H/H_{REF}$

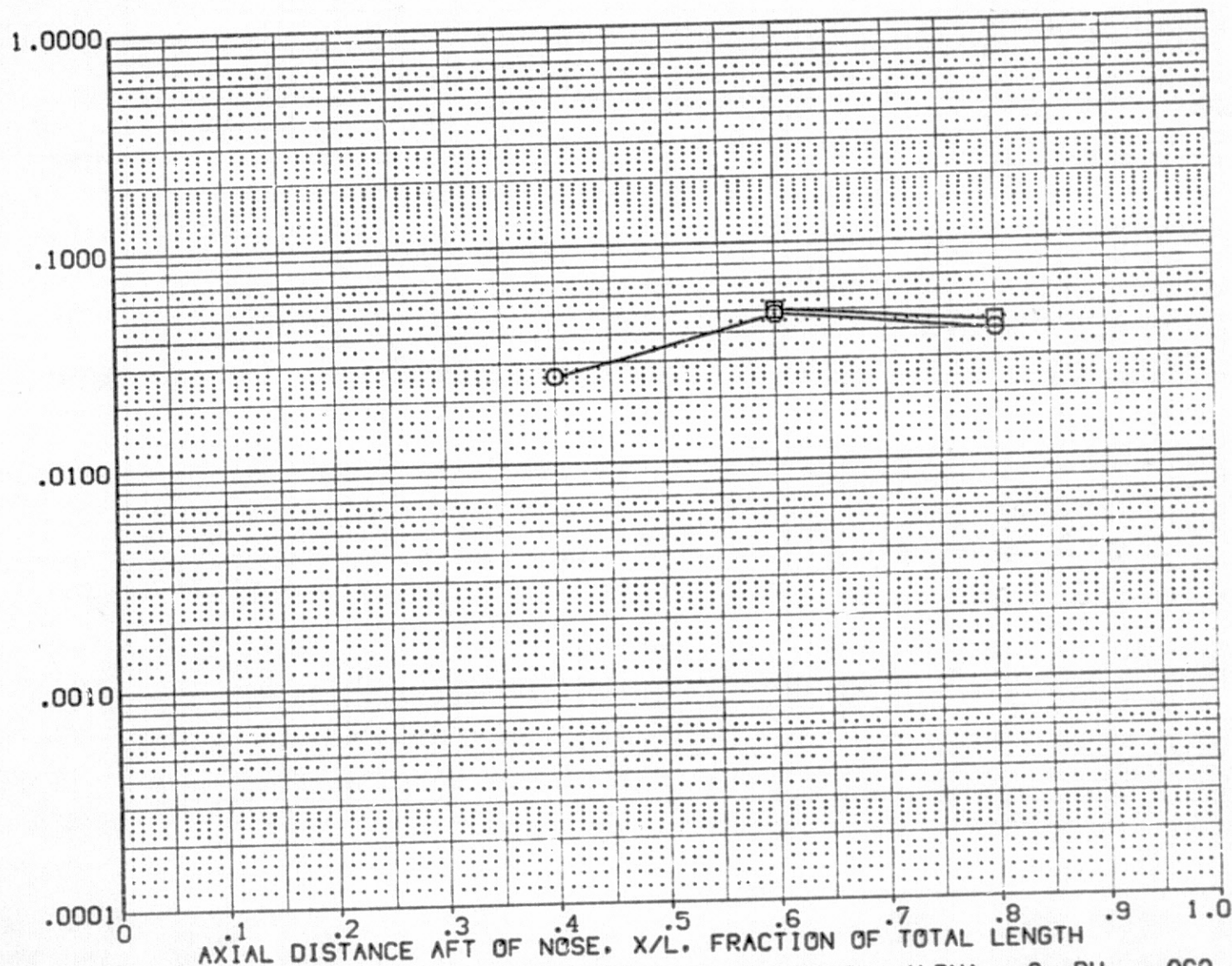


FIG. 38 INTEGRATED VEHICLE - ET SURFACE RN VARIATION ALPHA = 0 DH = .069

SYMBOL

RN/L

PHI

HAY/HT

MACH

PARAMETRIC VALUES

3.700

ALPHA

.000

○

1.990

45.000

.900

BETA

.000

DELTAH

.069

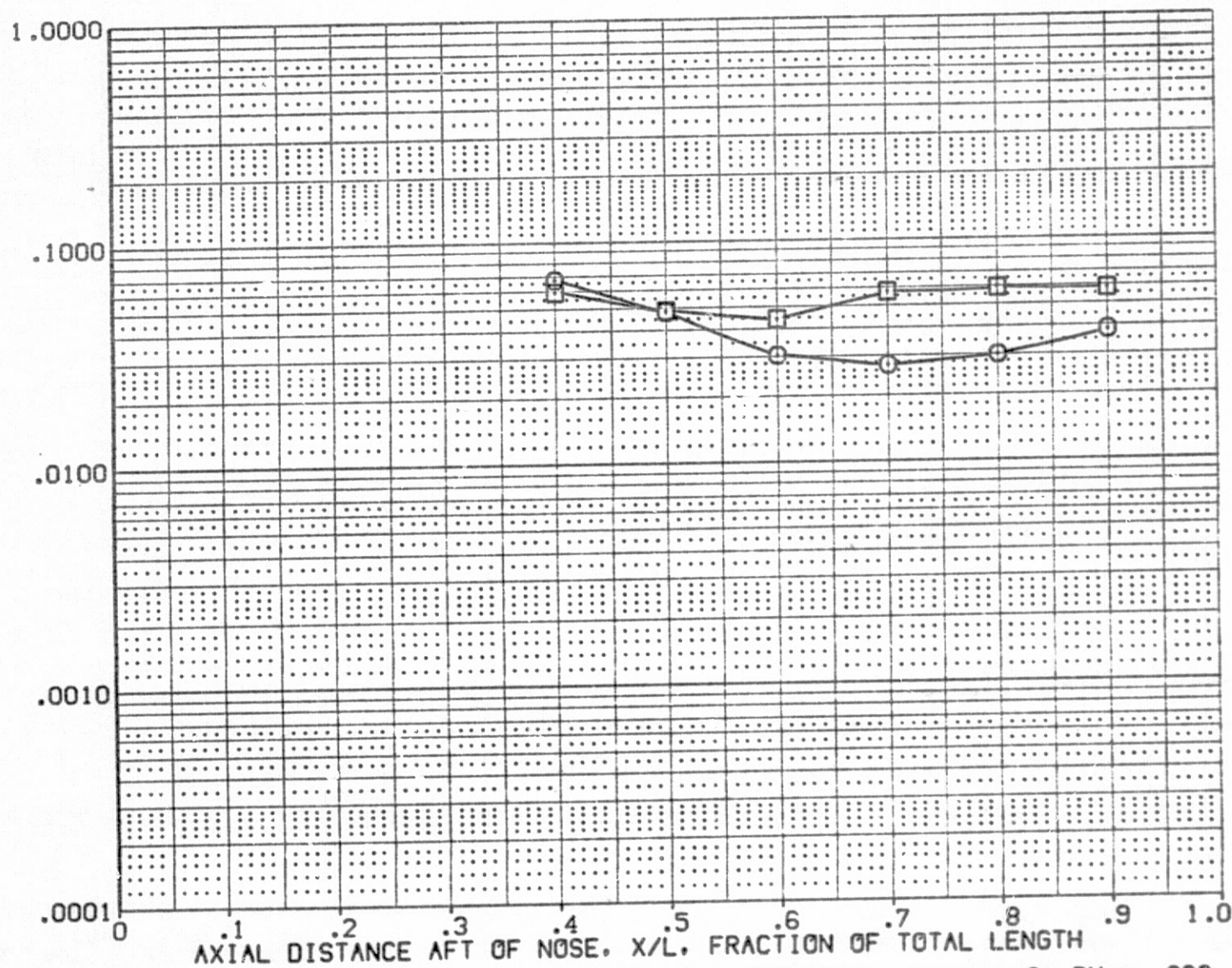
RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $H/H_{REF}$ 

FIG. 38 INTEGRATED VEHICLE - ET SURFACE RN VARIATION ALPHA = 0 DH = .069



IH16 089B + T8 + S6 EXTERNAL TANK SURFACE (CPQT13)

SYMBOL	RN/L	PHI	HAW/HT
○	1.990	67.500	.900
□	4.550		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.069

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

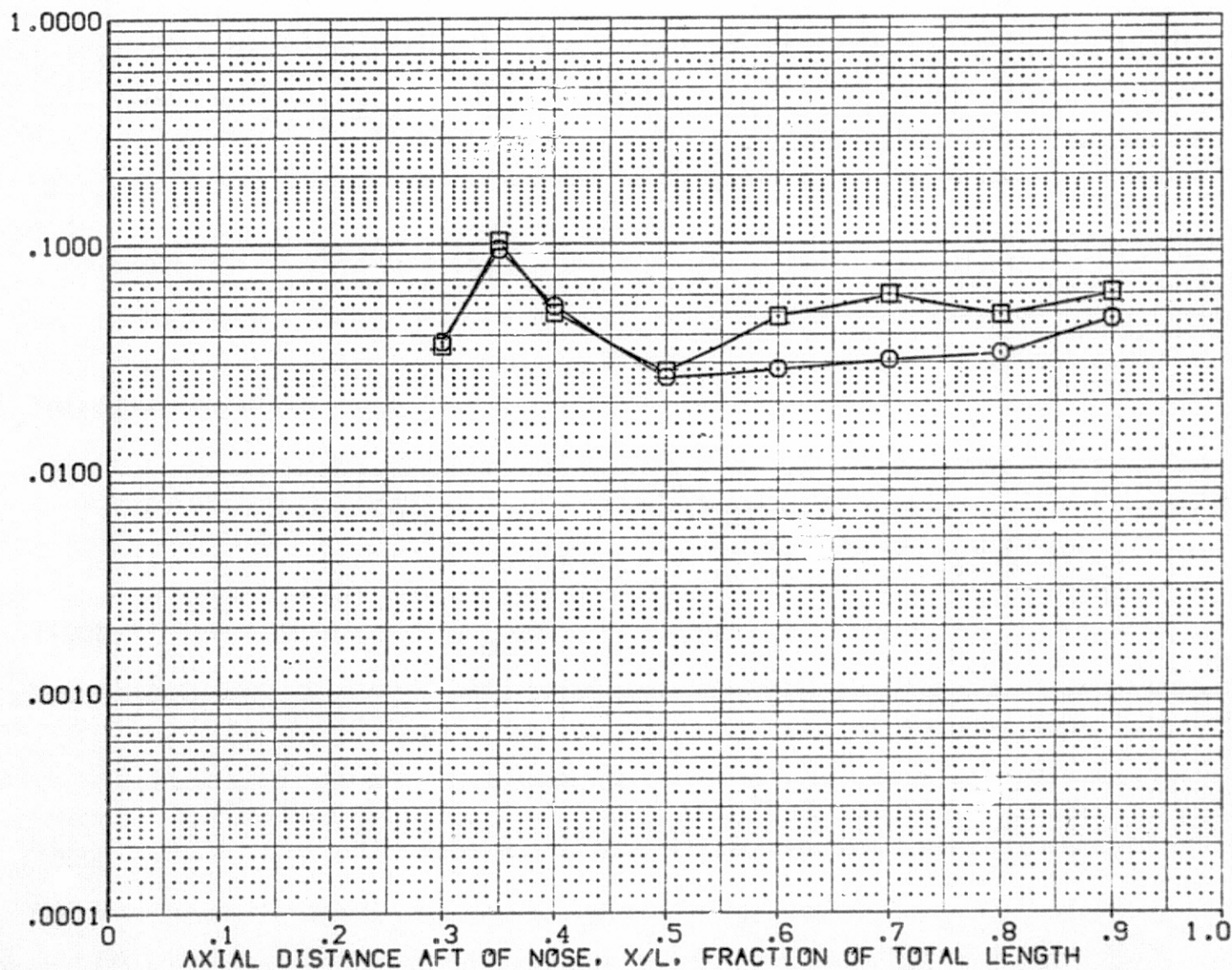


FIG. 38 INTEGRATED VEHICLE - ET SURFACE RN VARIATION ALPHA = 0 DH = .069

SYMBOL  
□  
○RN/L  
1.990  
4.550PHI  
90.000HAW/HT  
.900MACH  
BETA

PARAMETRIC VALUES

3.700  
.000ALPHA  
DELTAH.000  
.069

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

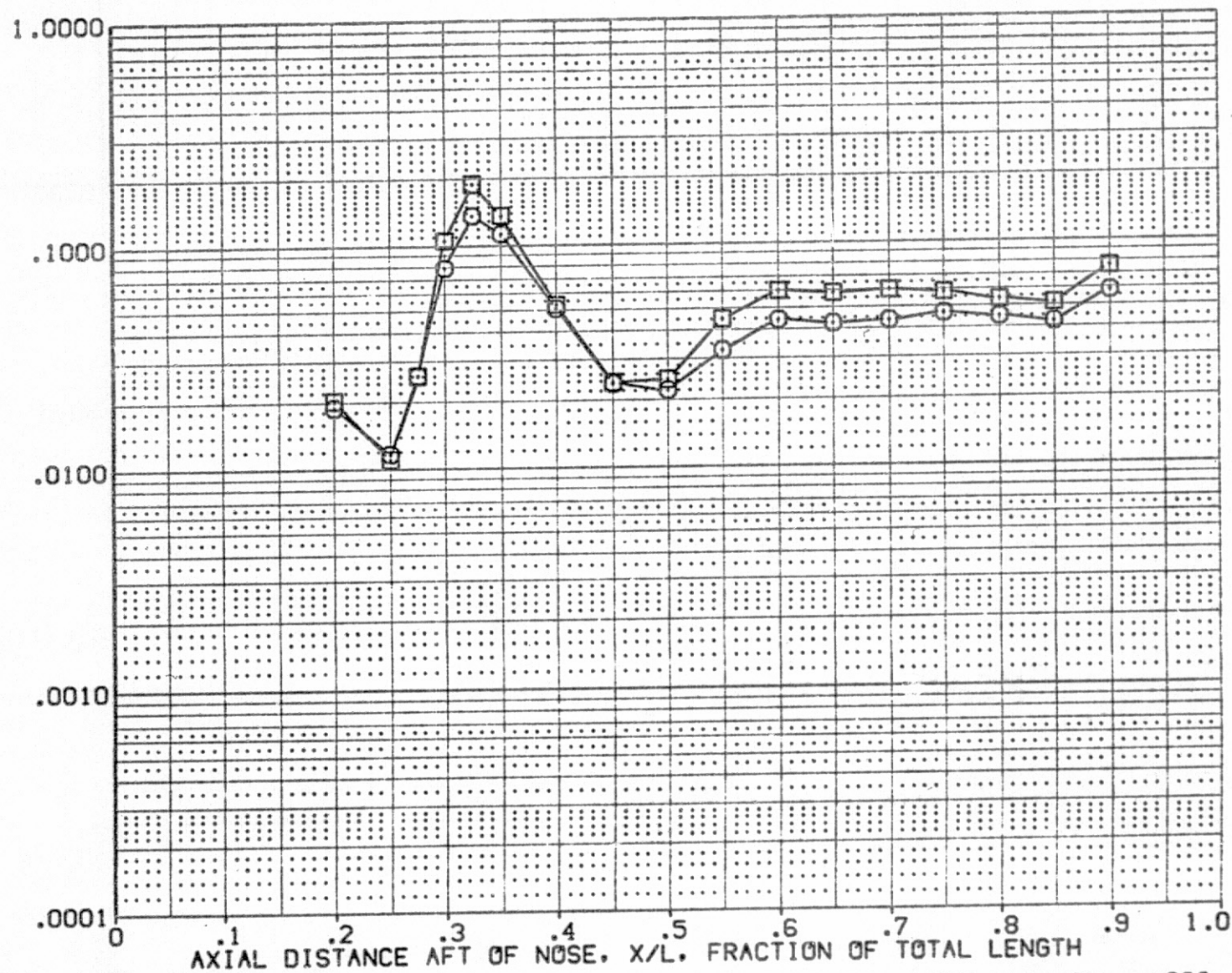


FIG. 38 INTEGRATED VEHICLE - ET SURFACE RN VARIATION ALPHA = 0 DH = .069



IH16 089B + T8 + S6 EXTERNAL TANK SURFACE (CPQT13)

SYMBOL	RN/L	PHI	HAW/HT
○	1.990	112.500	.900
□	4.550		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.069

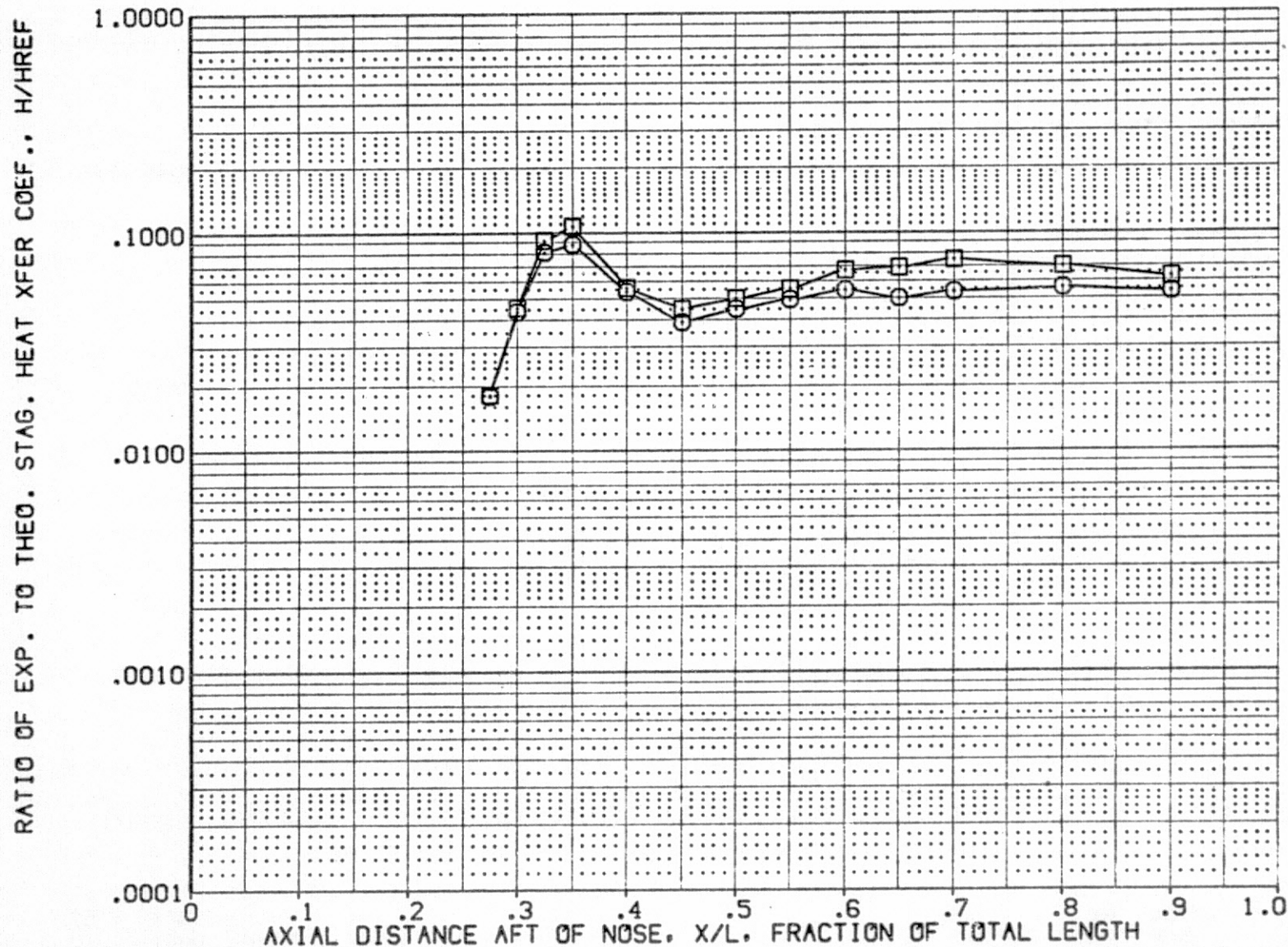


FIG. 38 INTEGRATED VEHICLE - ET SURFACE RN VARIATION ALPHA = 0 DH = .069

SYMBOL  
□ ○RN/L  
1.990  
4.550PHI  
135.000HAW/HT  
.900MACH  
BETA

PARAMETRIC VALUES

3.700 ALPHA

DELTAH

.000

.069

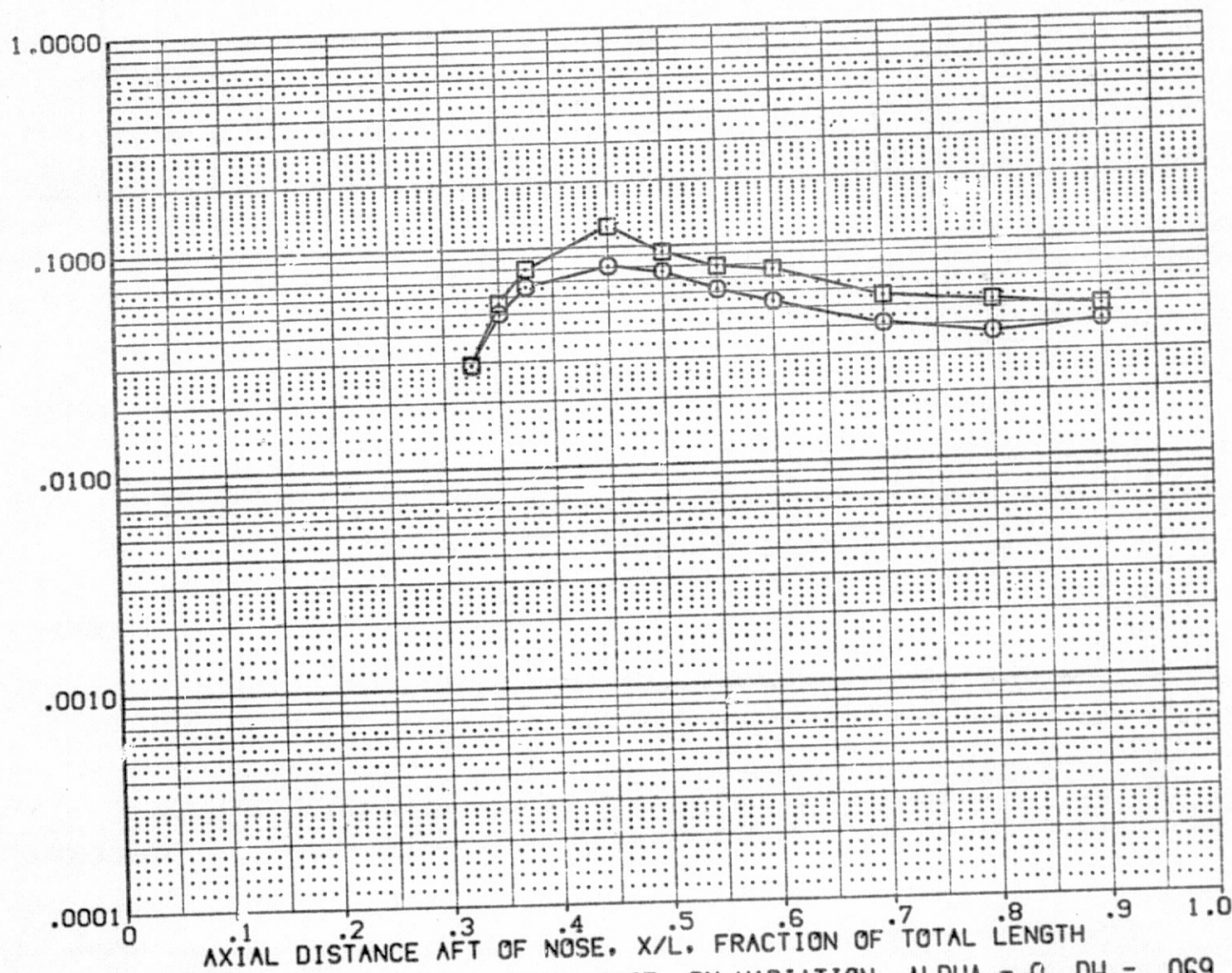
RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $H/H_{REF}$ 

FIG. 38 INTEGRATED VEHICLE - ET SURFACE RN VARIATION ALPHA = 0 DH = .069



IH16 089B + T8 + S6 EXTERNAL TANK SURFACE

(CPQT13)

SYMBOL  
 ○  
 □  
 RN/L  
 1.990  
 4.550  
 PHI  
 157.500  
 HAW/HT  
 .900

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000 DELTAH .069

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

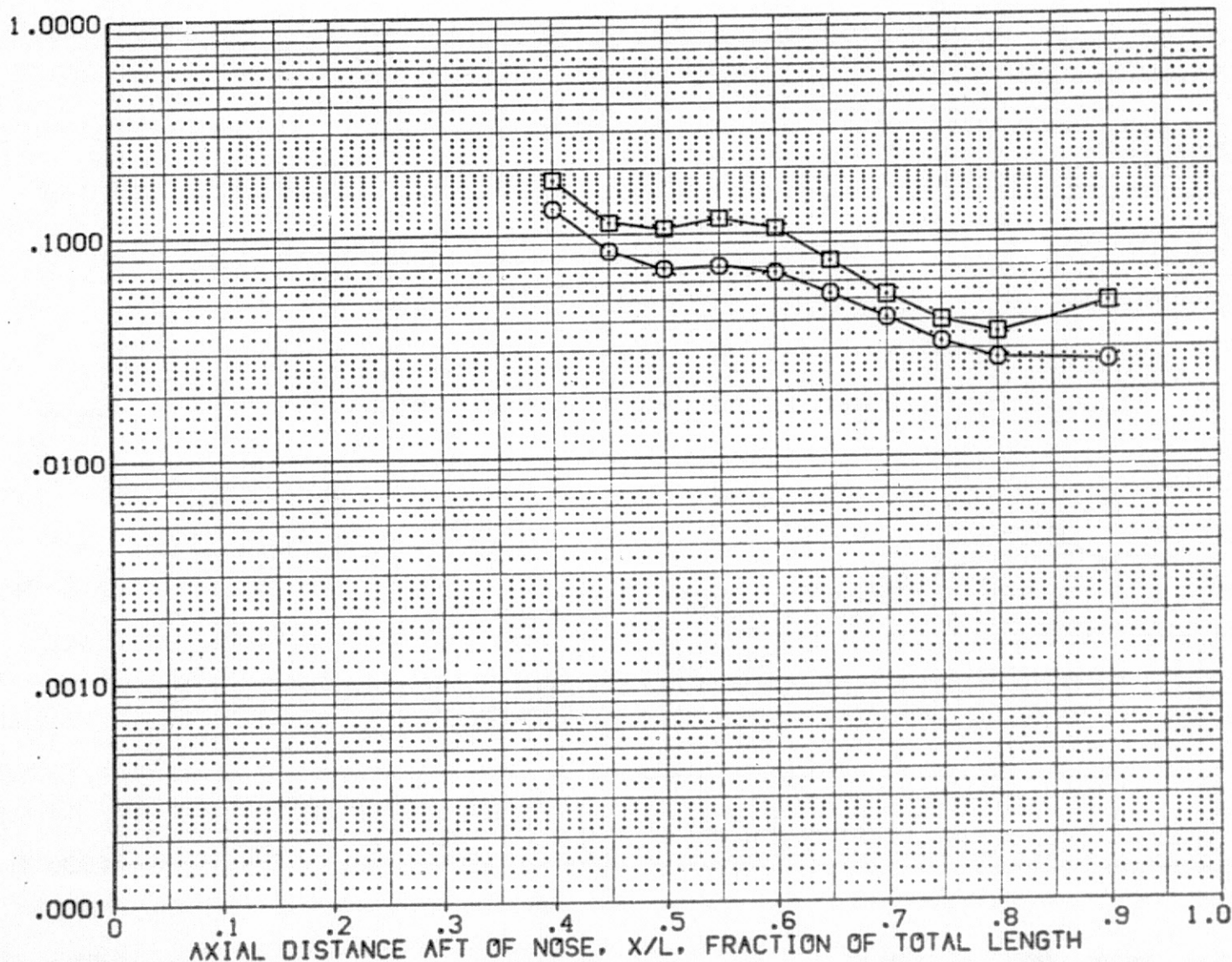


FIG. 38 INTEGRATED VEHICLE - ET SURFACE RN VARIATION ALPHA = 0 DH = .069

SYMBOL	RN/L	PHI	HAW/HT
○	1.990	180.000	.900
□	4.550		

PARAMETRIC VALUES		
MACH	ALPHA	DELTAH
BETA	3.700	.000
	.000	.069

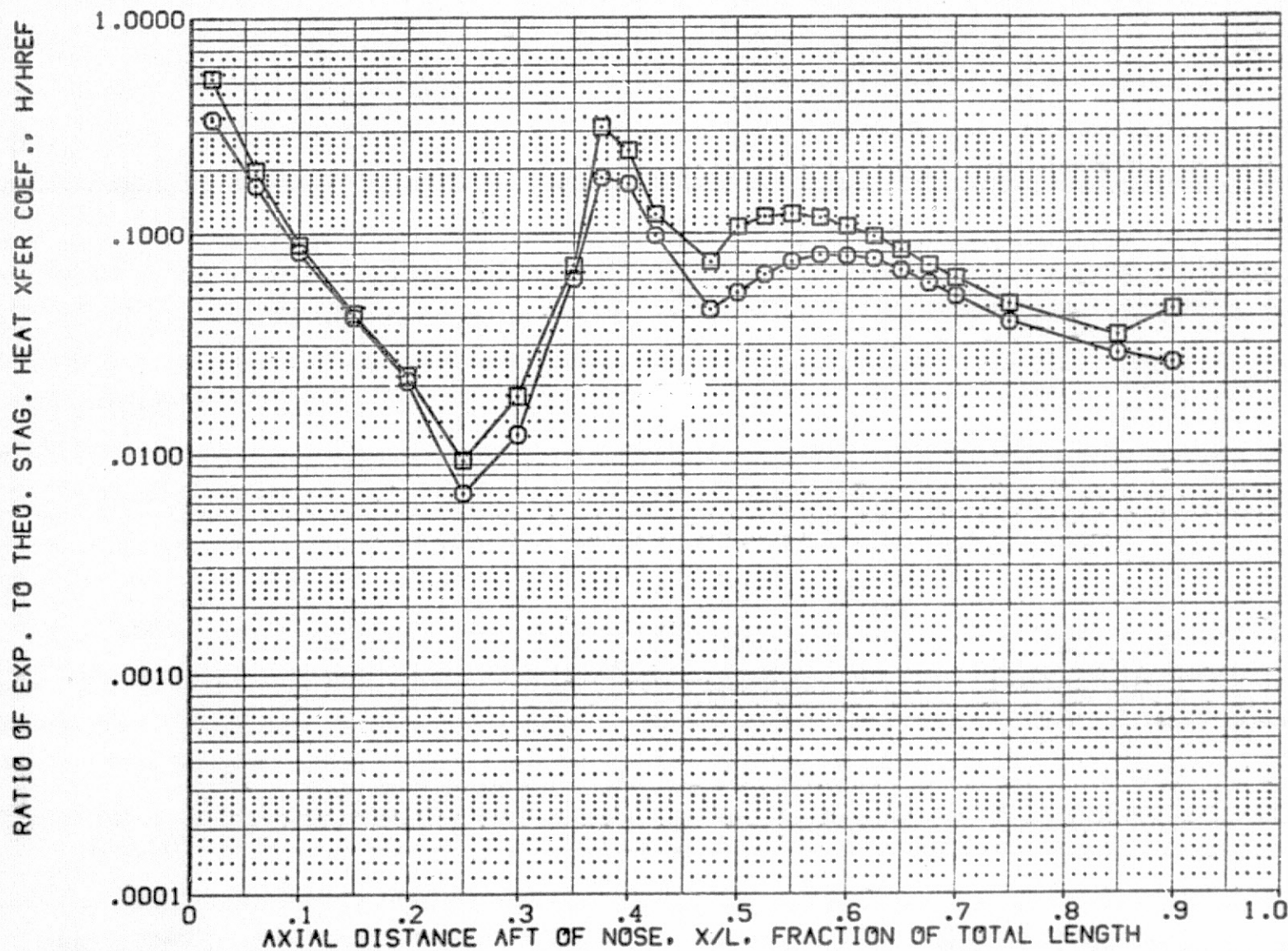


FIG. 38 INTEGRATED VEHICLE - ET SURFACE RN VARIATION ALPHA = 0 DH = .069



# IH16 089B + T8 + S6 EXTERNAL TANK SURFACE

(CPQT14)

SYMBOL  
○  
□

RN/L  
2.000  
4.470

PHI  
.000

HAV/HT  
.900

MACH  
BETA

PARAMETRIC VALUES  
3.700 ALPHA  
.000 DELTAH

-5.000  
.069

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

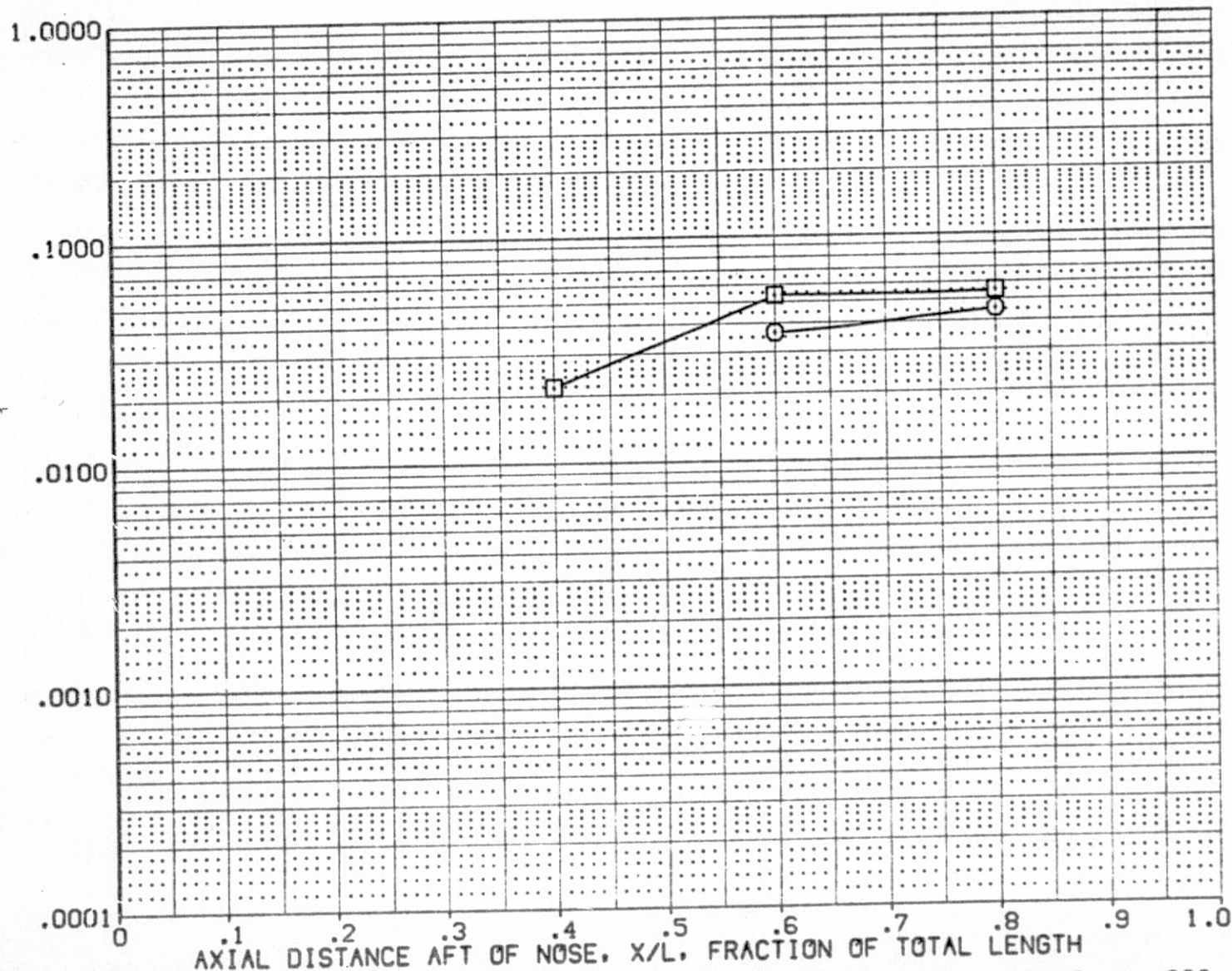


FIG. 39 INTEGRATED VEHICLE - ET SURFACE RN VARIATION ALPHA = -5 DH = .069

SYMBOL	RN/L	PHI	HAV/HT
○	2.000	45.000	.900
□	4.470		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	-5.000
BETA	.000	DELTAH	.069

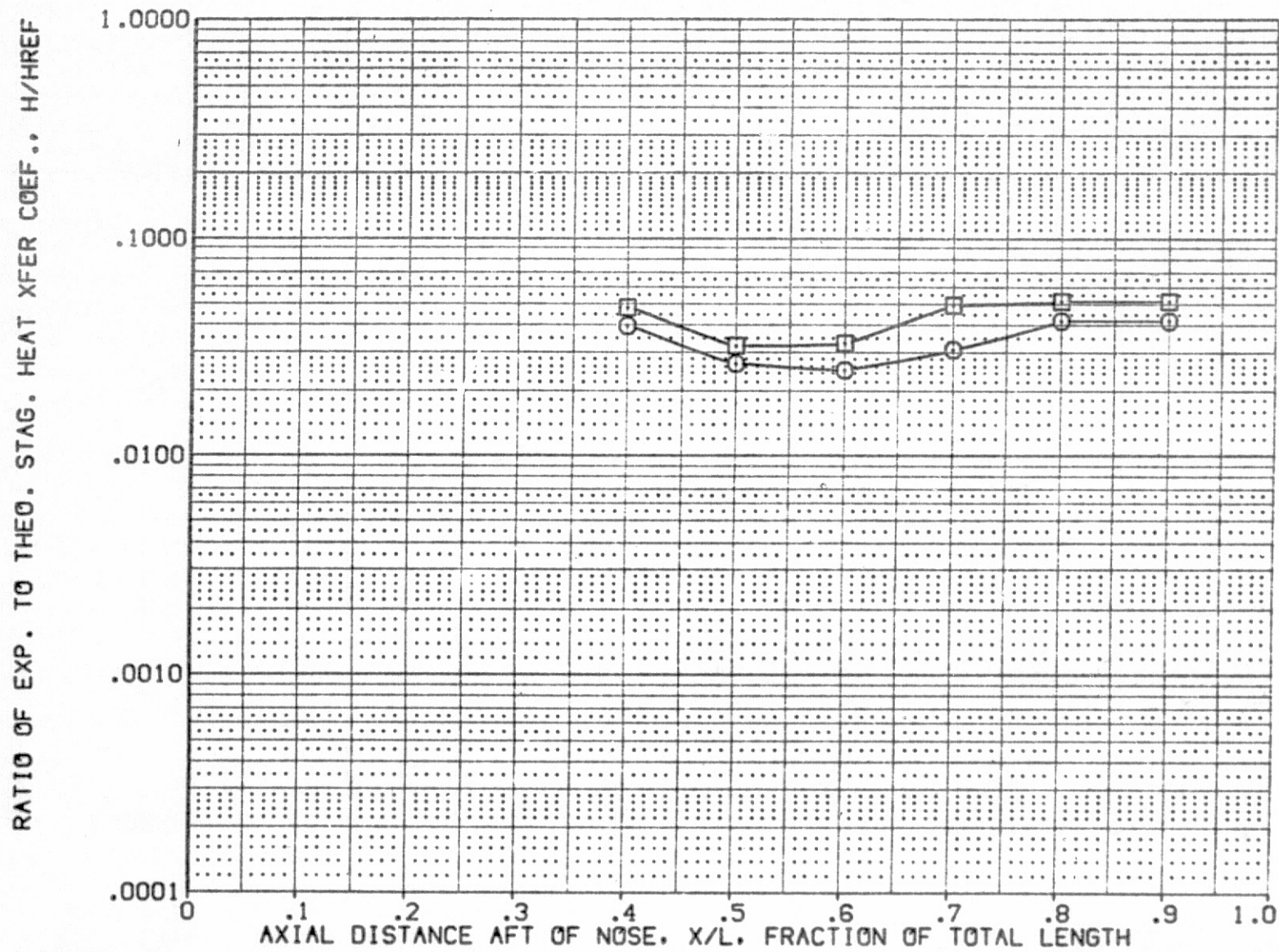


FIG. 39 INTEGRATED VEHICLE - ET SURFACE RN VARIATION ALPHA = -5 DH = .069



IH16 089B + T8 + S6 EXTERNAL TANK SURFACE

(CPQT14)

SYMBOL  $\square$   $\circ$   
 RN/L 2.000 4.470  
 PHI 67.500  
 HAW/HT .900

PARAMETRIC VALUES  
 MACH 3.700 ALPHA -5.000  
 BETA .000 DELTAH .069

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $H/H_{REF}$

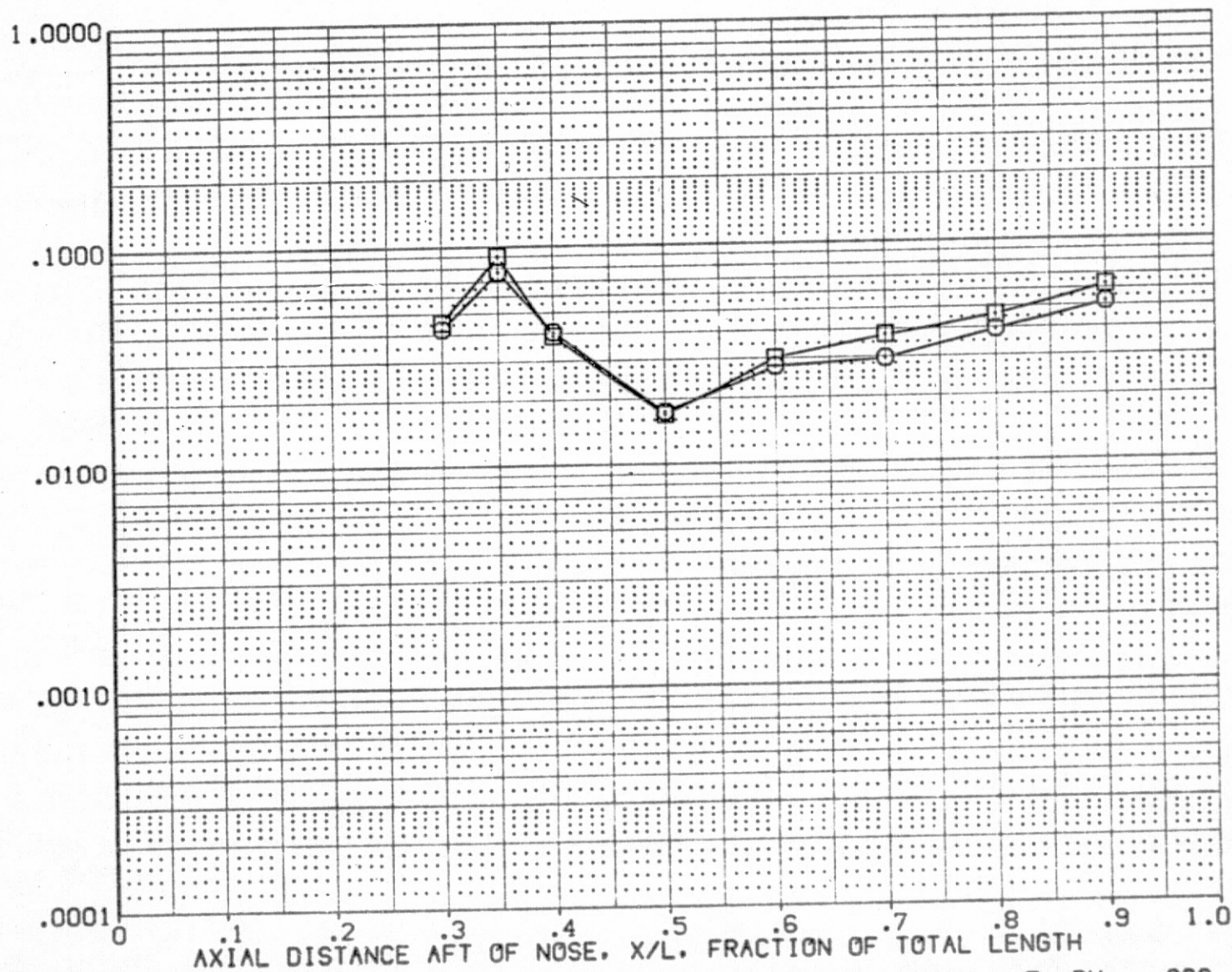


FIG. 39 INTEGRATED VEHICLE - ET SURFACE RN VARIATION ALPHA = -5 DH = .069

SYMBOL	RN/L	PHI	HAV/HT
○	2.000	90.000	.900
□	4.470		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	-5.000
BETA	.000	DELTAH	.069

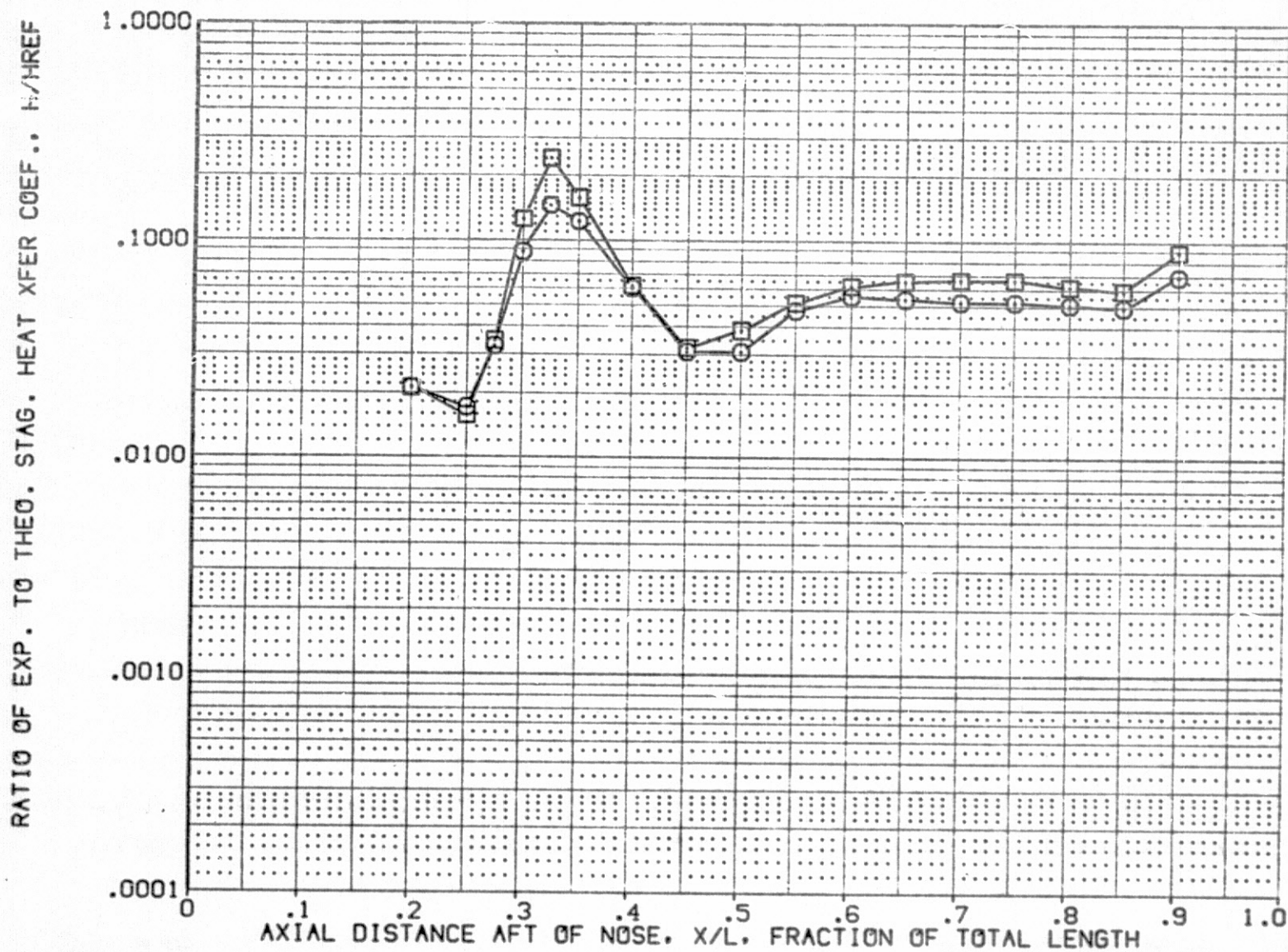


FIG. 39 INTEGRATED VEHICLE - ET SURFACE RN VARIATION ALPHA = -5 DH = .069



IH16 089B + T8 + S6 EXTERNAL TANK SURFACE

(CPQT14)

SYMBOL	RN/L	PHI	HAW/HT
○	2.000	112.500	.900
□	4.470		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	-5.000
BETA	.000	DELTAH	.069

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

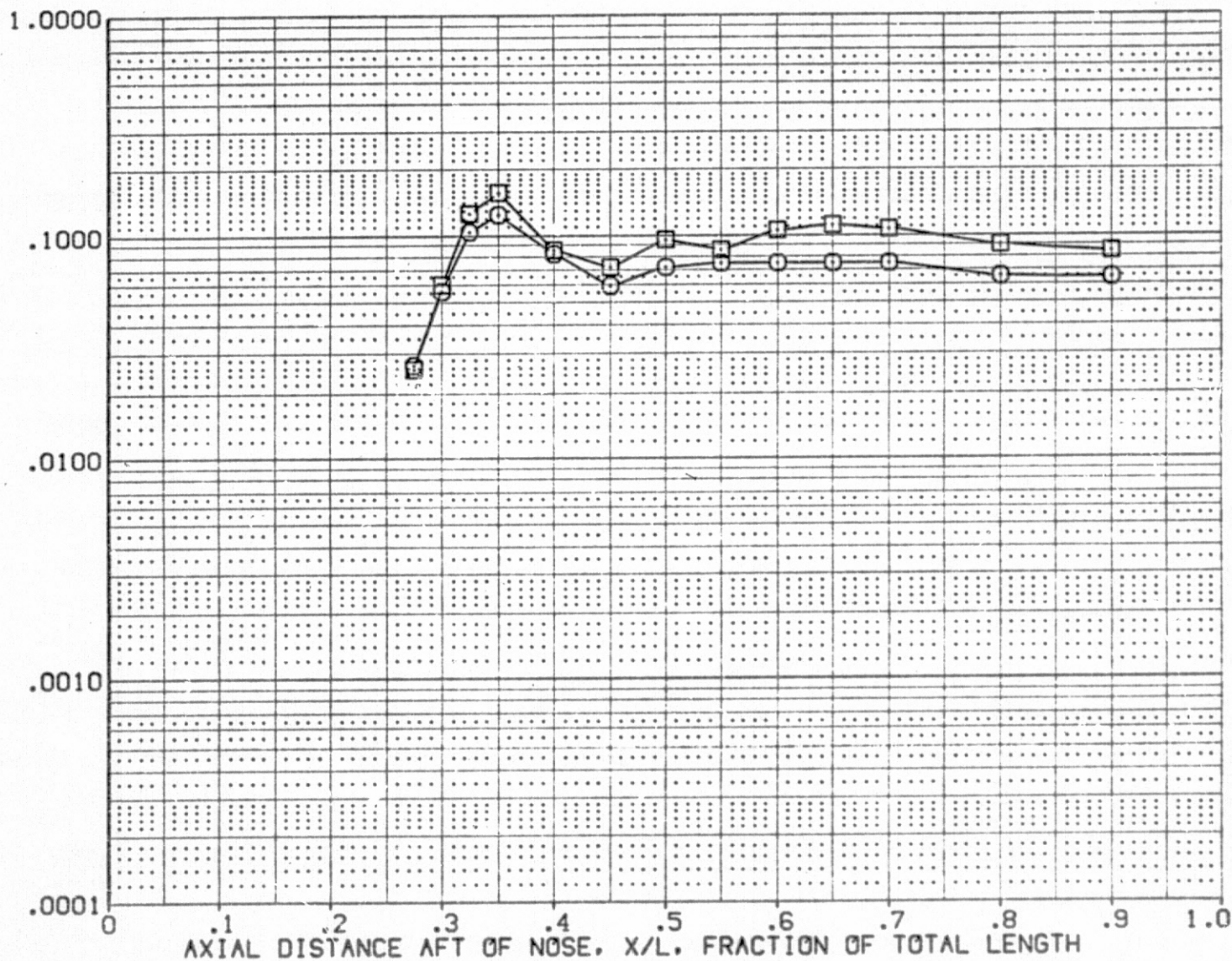


FIG. 39 INTEGRATED VEHICLE - ET SURFACE RN VARIATION ALPHA = -5 DH = .069

SYMBOL	RN/L	PHI	HAY/HT
○	2.000	135.000	.900
□	4.470		

	PARAMETRIC VALUES		
MACH	3.700	ALPHA	-5.000
BETA	.000	DELTAH	.069

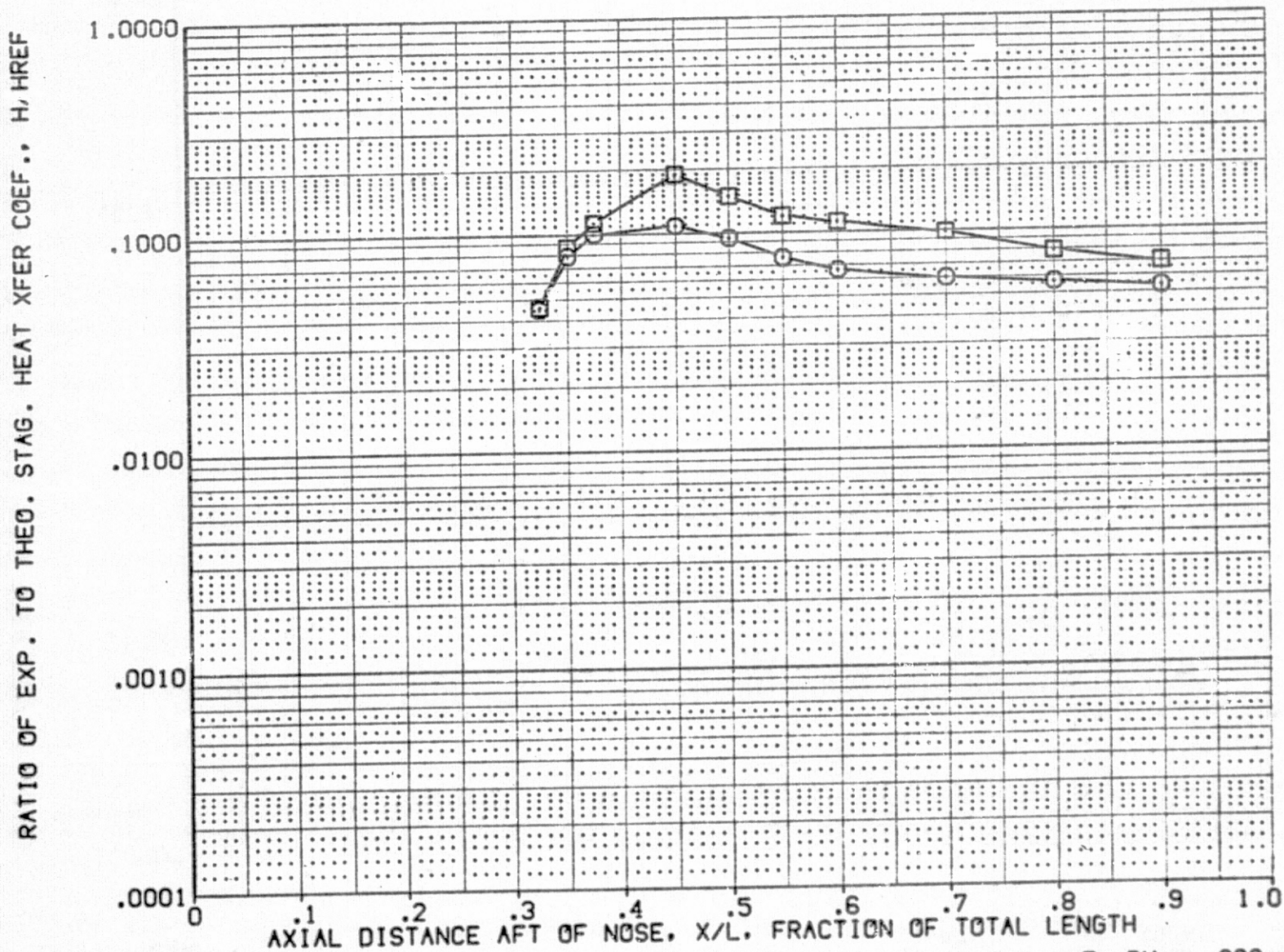


FIG. 39 INTEGRATED VEHICLE - ET SURFACE RN VARIATION ALPHA = -5 DH = .069



IH16 089B + T8 + S6 EXTERNAL TANK SURFACE

(CPQT14)

SYMBOL	RN/L	PHI	HAW/HT
○	2.000	157.500	.900
□	4.470		

	PARAMETRIC VALUES		
MACH	3.700	ALPHA	-5.000
BETA	.000	DELTAH	.069

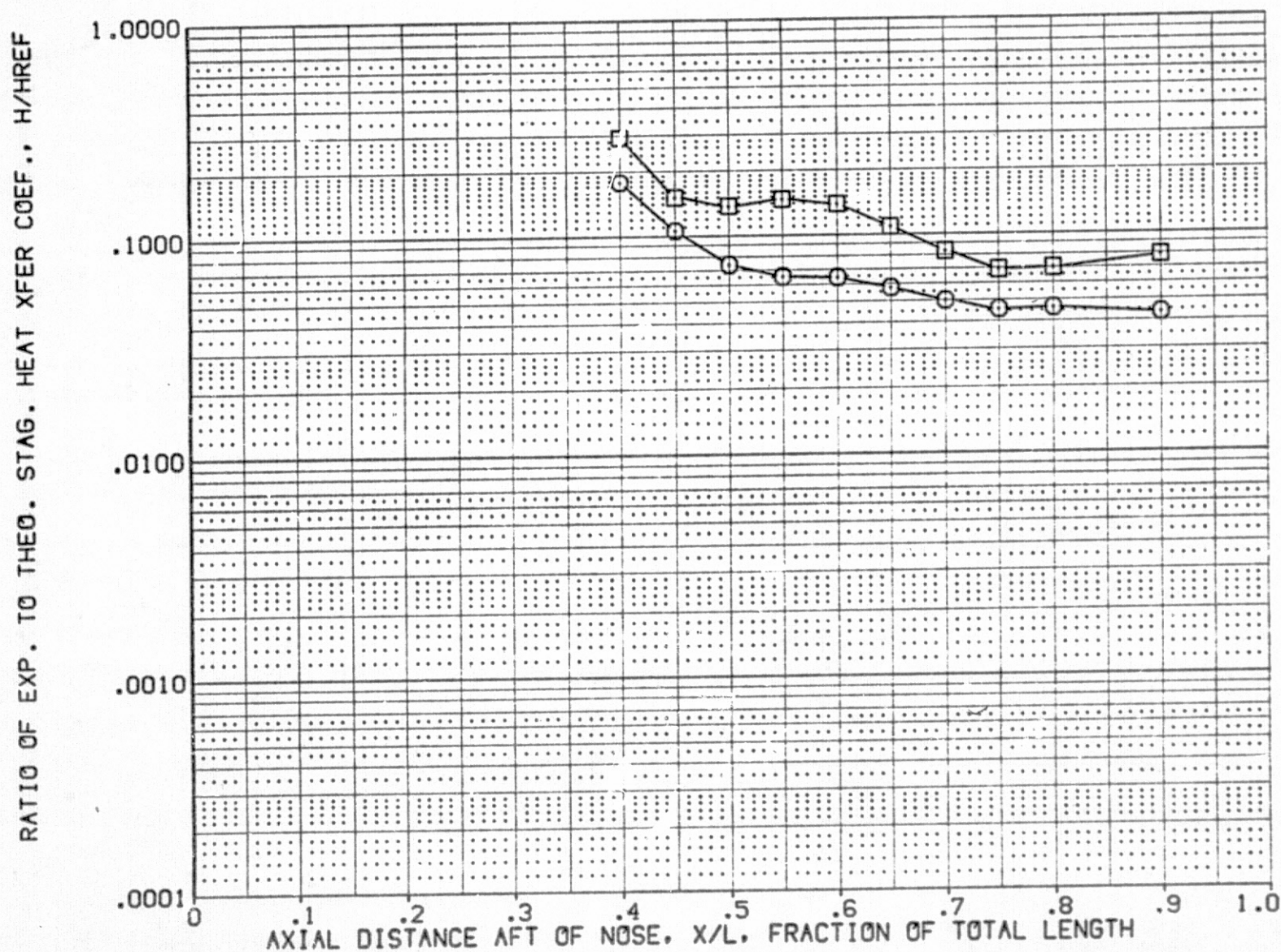


FIG. 39 INTEGRATED VEHICLE - ET SURFACE RN VARIATION ALPHA = -5 DH = .069

SYMBOL	RN/L	PHI	HAV/HT
○	2.000	180.000	.900
□	4.470		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
ALPHA	-5.000
DELTAH	.069

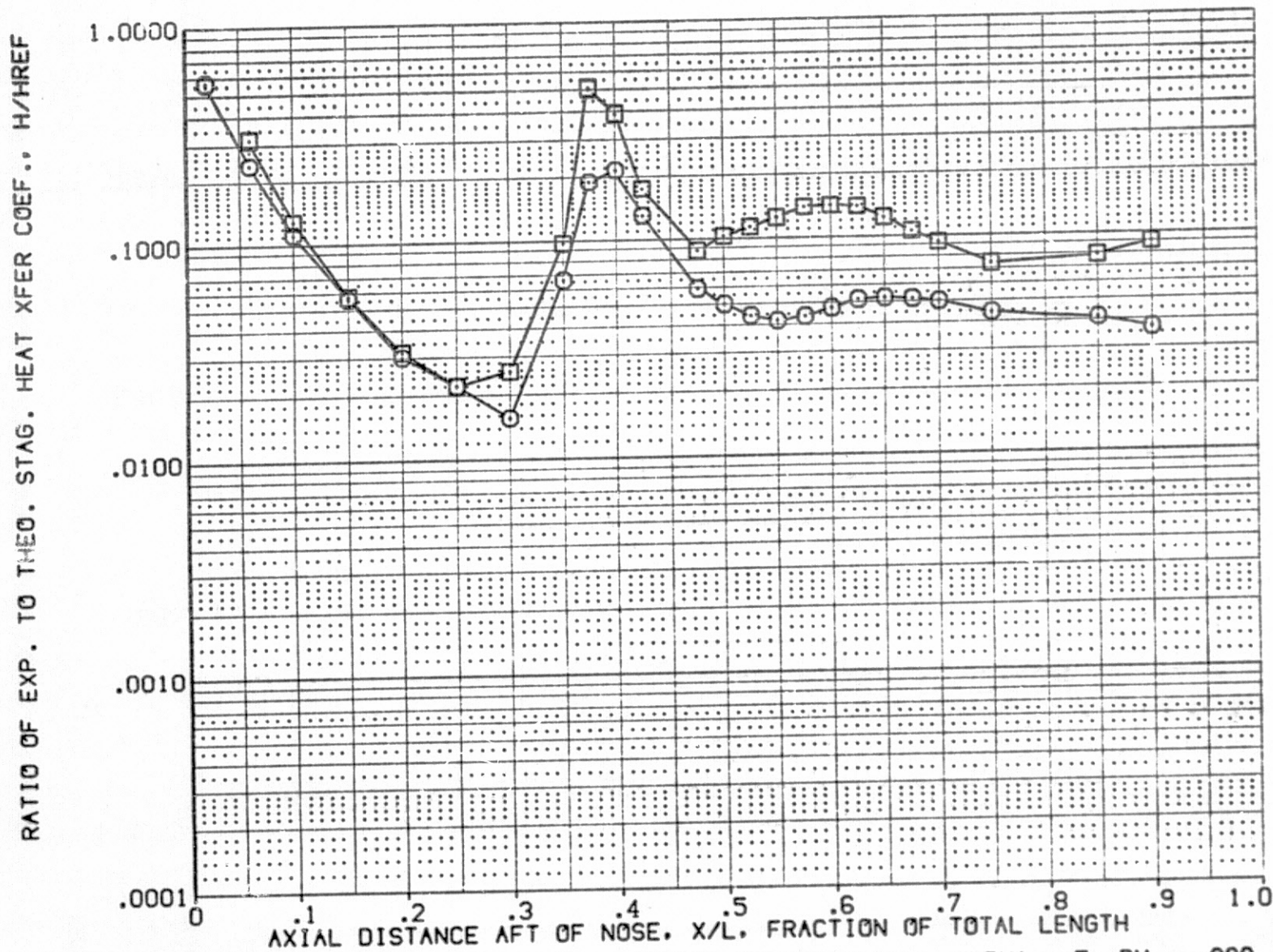


FIG. 39 INTEGRATED VEHICLE - ET SURFACE RN VARIATION ALPHA = -5 DH = .069



## IH16 089B+T8+S6+GRIT EXTERNAL TANK SURFACE

(CPQT15)

SYMBOL    RN/L    PHI    HAW/HT  
 □    1.890    .000    .900  
 □    4.620

PARAMETRIC VALUES  
 MACH    3.700    ALPHA    .000  
 BETA    .000    DELTAH    .175  
 GRITNO    25.000

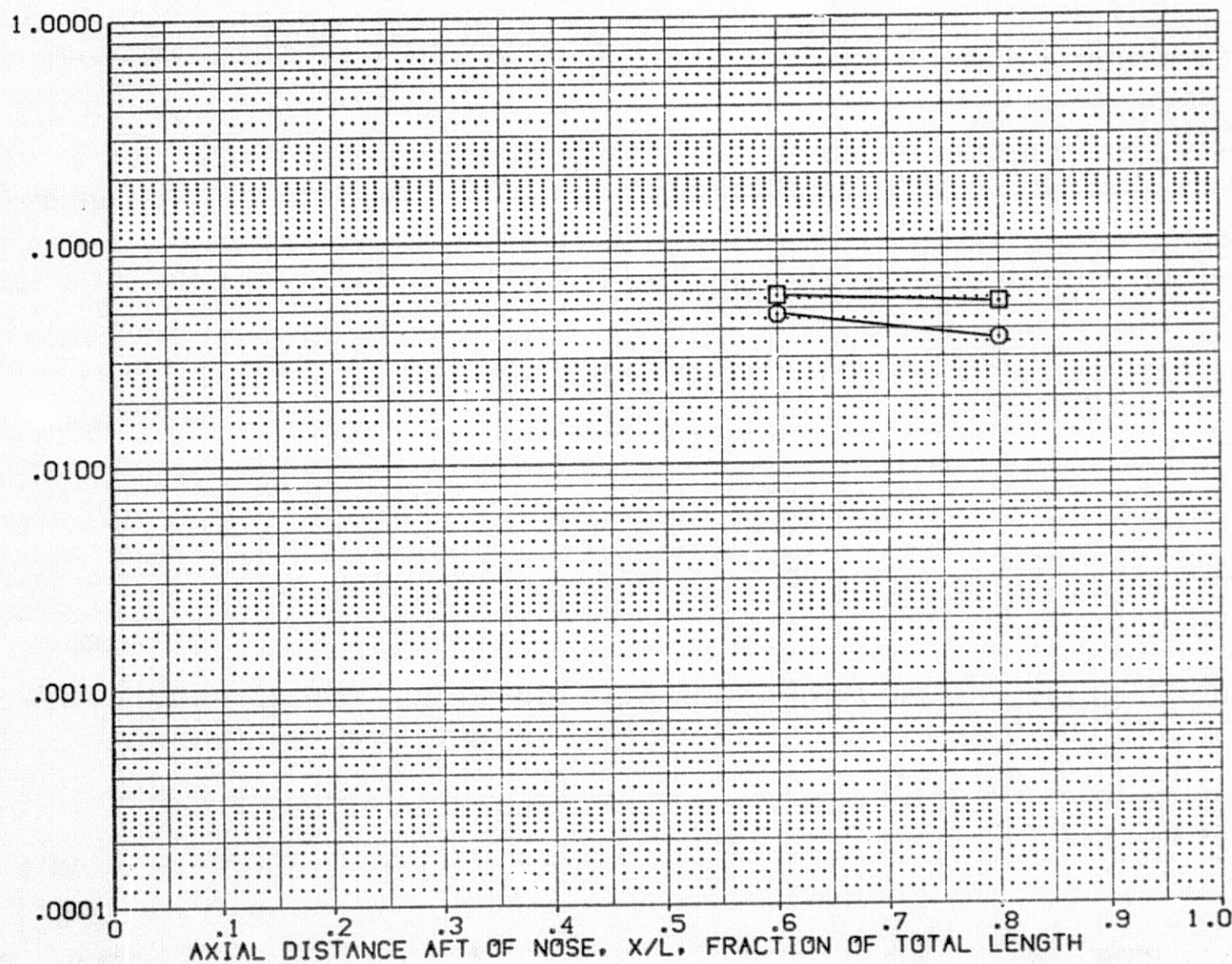
RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.  $H/H_{REF}$ 

FIG. 40 INTEGRATED VEHICLE - ET SURFACE RN VARIATION WITH GRIT DH = .175

SYMBOL

□  
○

RN/L

1.890  
4.620

PHI

45.000

HAW/HT

.900

MACH

PARAMETRIC VALUES

3.700

ALPHA

.000

BETA

.000

DELTAH

.175

GRITNO

25.000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

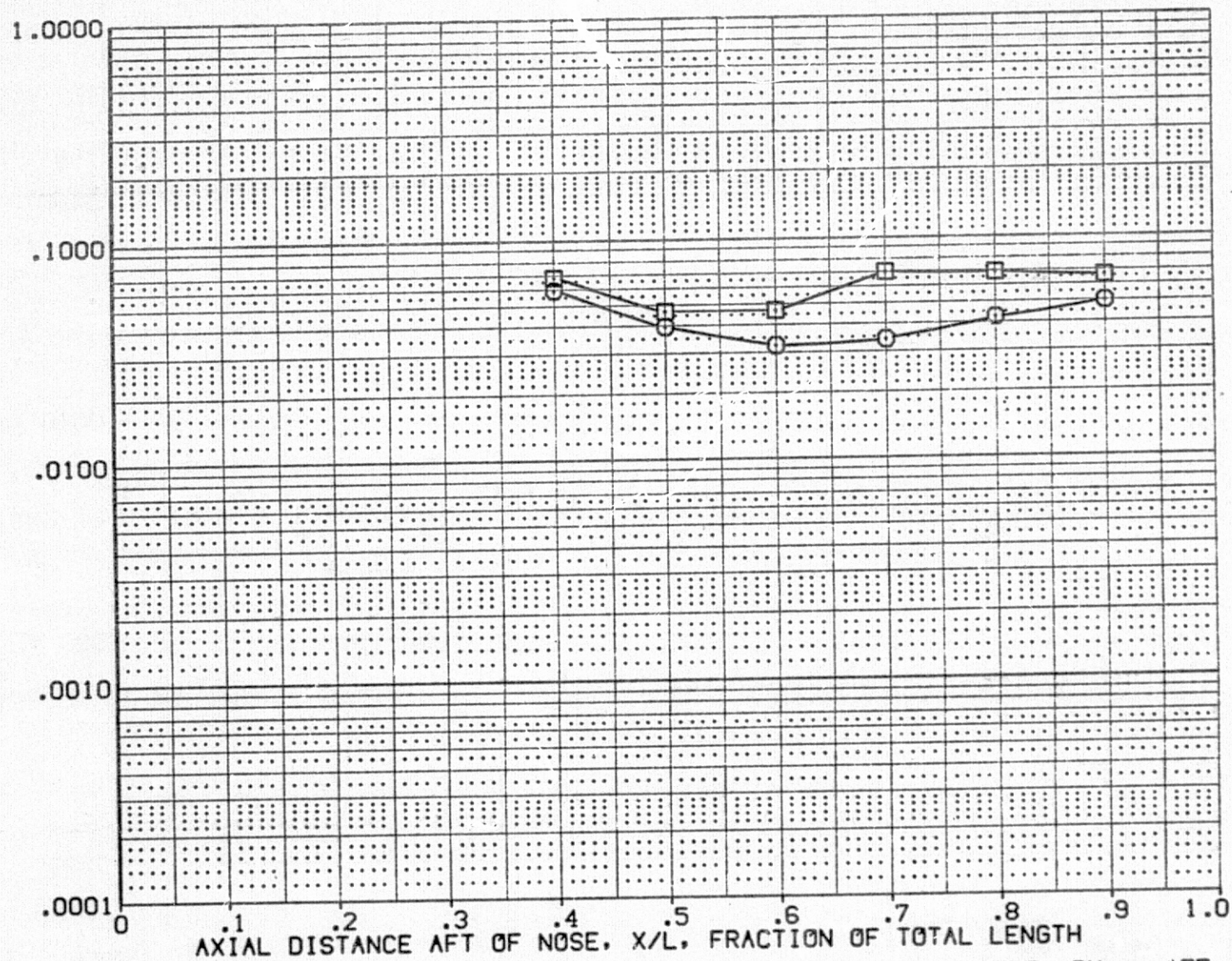


FIG. 40 INTEGRATED VEHICLE - ET SURFACE RN VARIATION WITH GRIT DH = .175

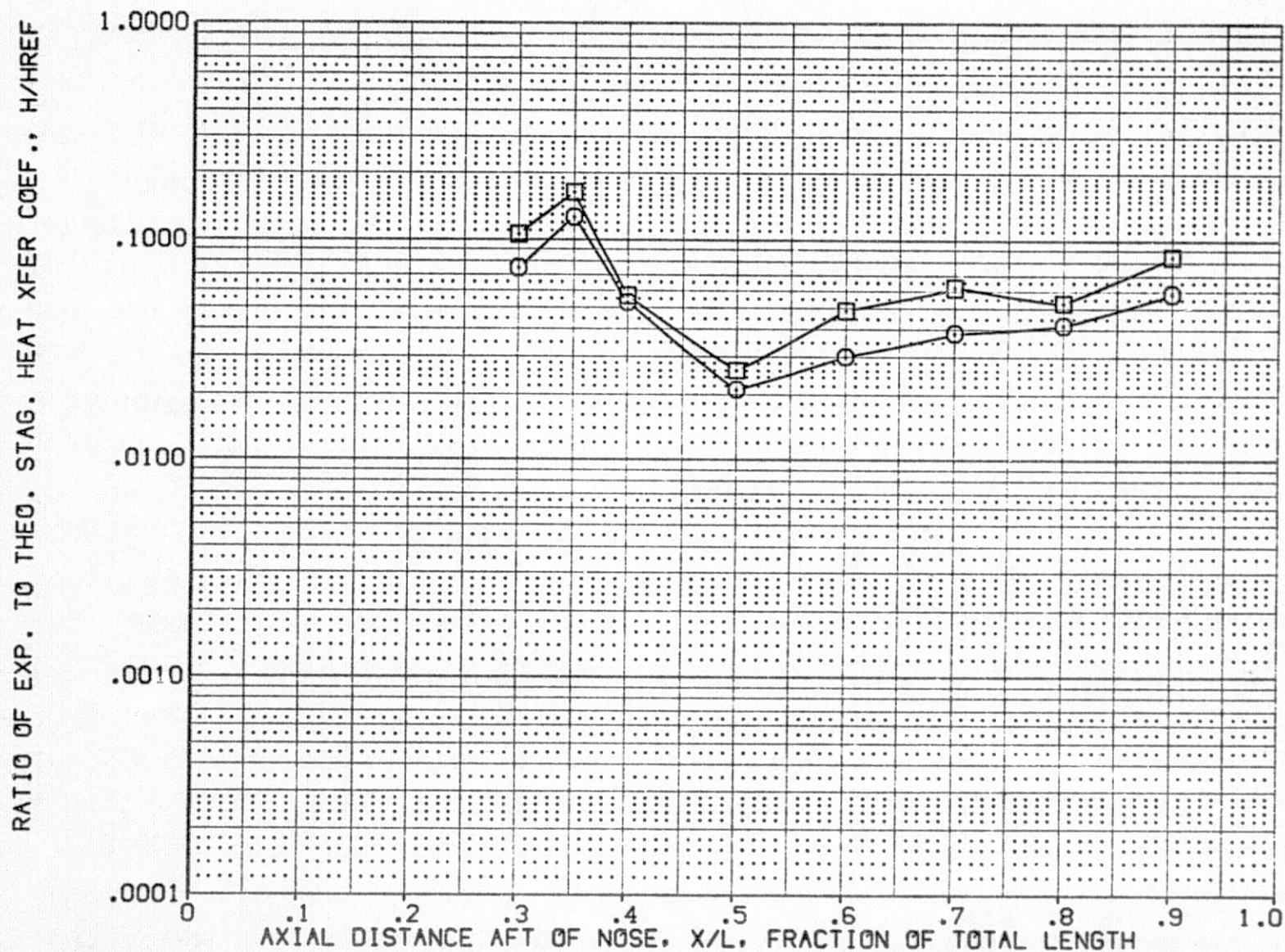


## IH16 089B+T8+S6+GRIT EXTERNAL TANK SURFACE

(CPQT15)

SYMBOL	RN/L	PHI	HAW/HT
○	1.890	67.500	.900
□	4.620		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175
GRITNO	25.000		

FIG. 40 INTEGRATED VEHICLE - ET SURFACE RN VARIATION WITH GRIT  $DH = .175$

SYMBOL	RN/L	PHI	HAW/HT
○	1.890	90.000	.900
□	4.620		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175
GRITN0	25.000		

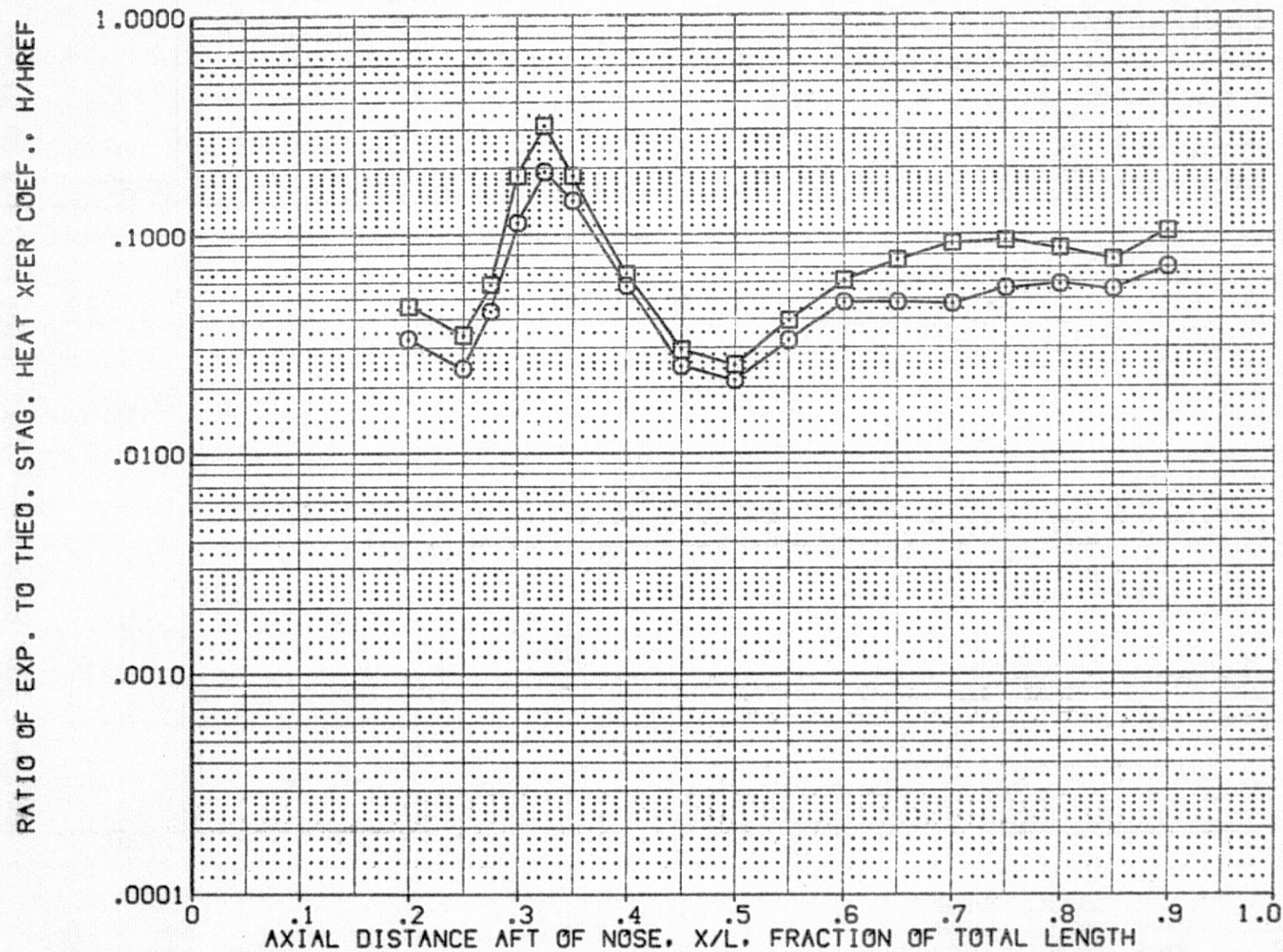


FIG. 40 INTEGRATED VEHICLE - ET SURFACE RN VARIATION WITH GRIT DH = .175



## IH16 089B+T8+S6+GRIT EXTERNAL TANK SURFACE

(CPQT15)

SYMBOL	RN/L	PHI	HAW/HT
○	1.890	112.500	.900
□	4.620		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175
GRITNO	25.000		

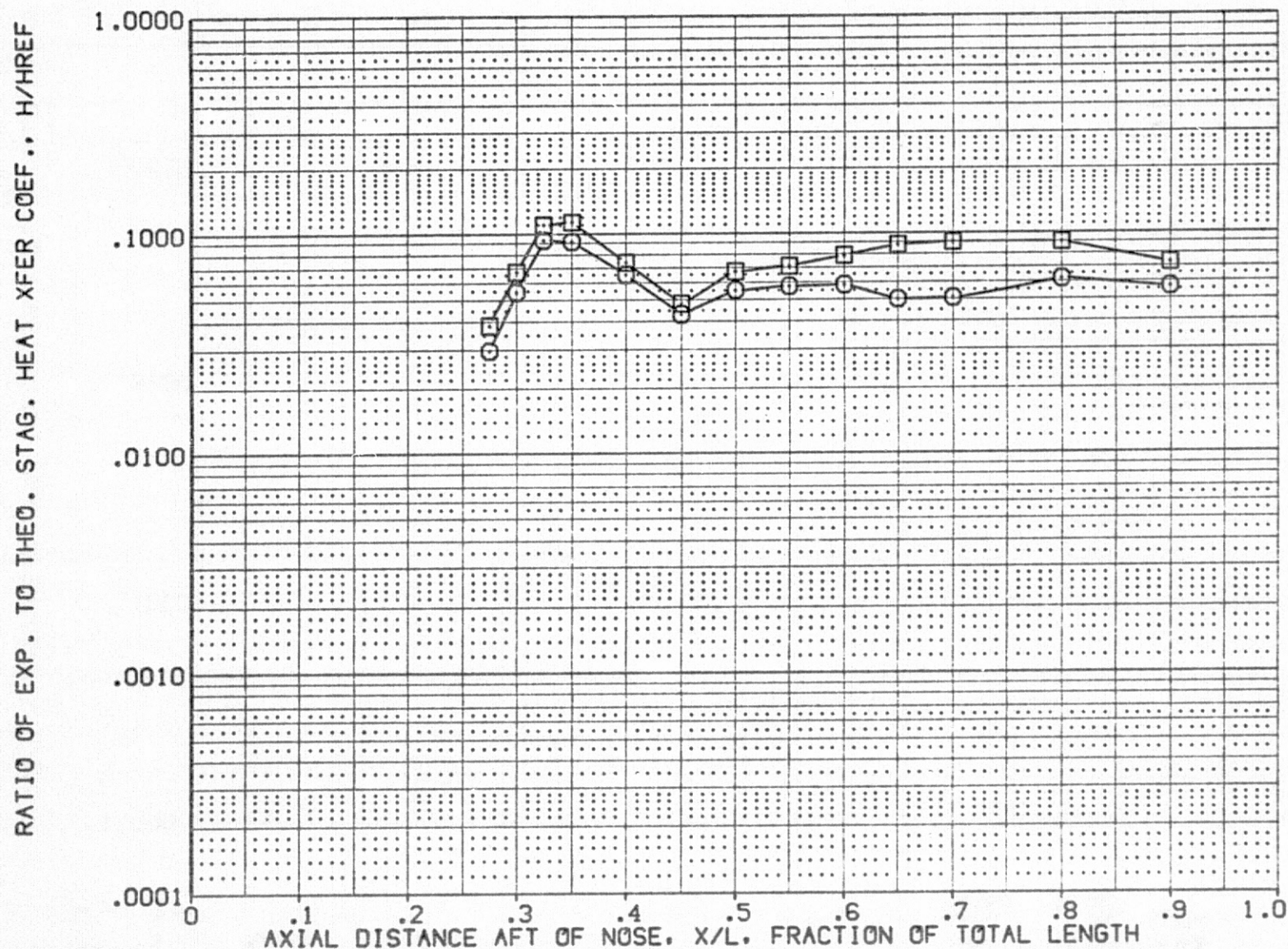


FIG. 40 INTEGRATED VEHICLE - ET SURFACE RN VARIATION WITH GRIT DH = .175

## IH16 089B+T8+S6+GRIT EXTERNAL TANK SURFACE

(CPQT15)

SYMBOL	RN/L	PHI	HAW/HT
○	1.890	135.000	.900
□	4.620		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175
GRITNO	25.000		

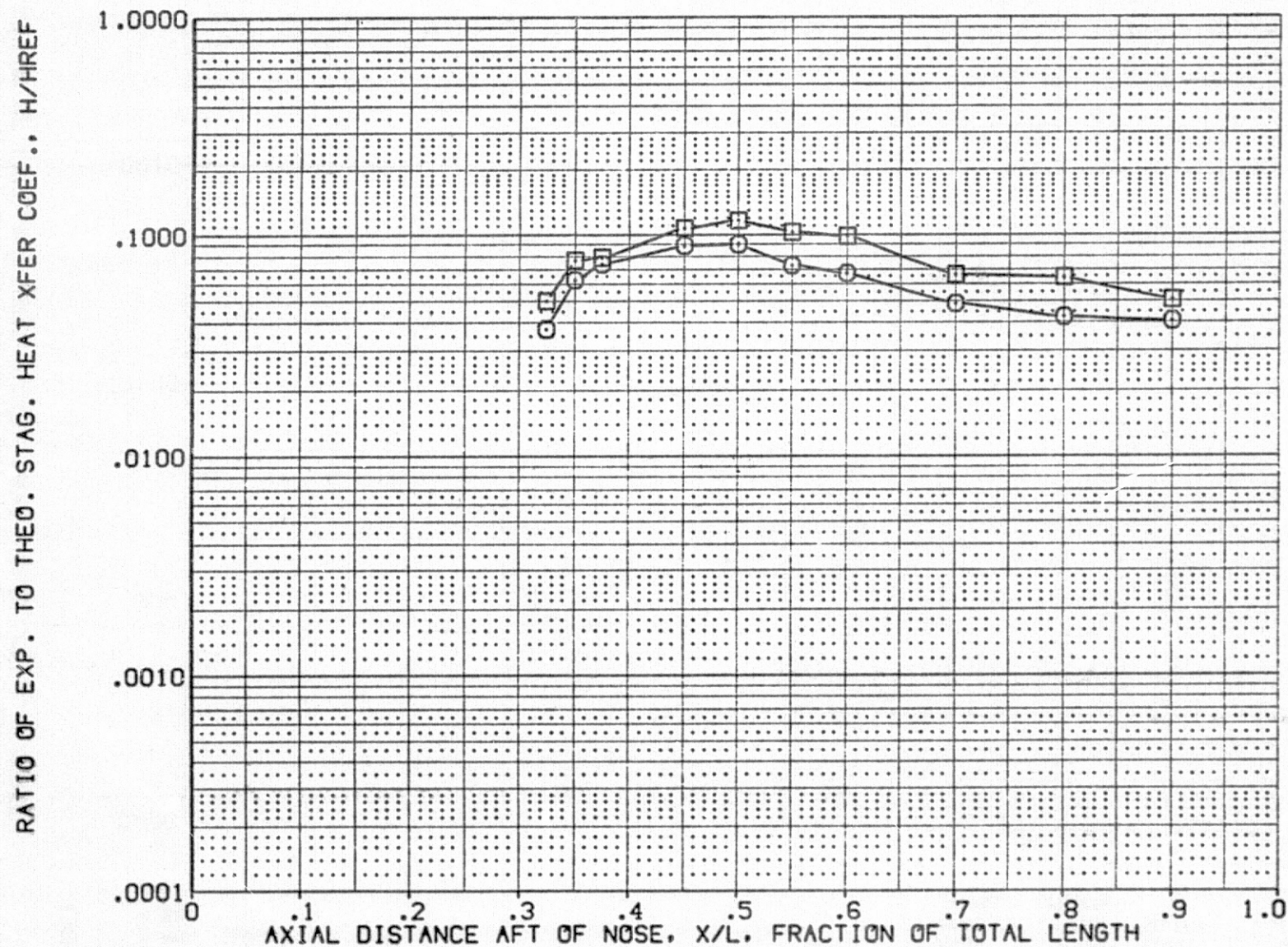


FIG. 40 INTEGRATED VEHICLE - ET SURFACE RN VARIATION WITH GRIT DH = .175



## IH16 089B+T8+S6+GRIT EXTERNAL TANK SURFACE

(CPQT15)

SYMBOL	RN/L	PHI	HAW/HT
○	1.890	157.500	.900
□	4.620		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175
GRITNO	25.000		

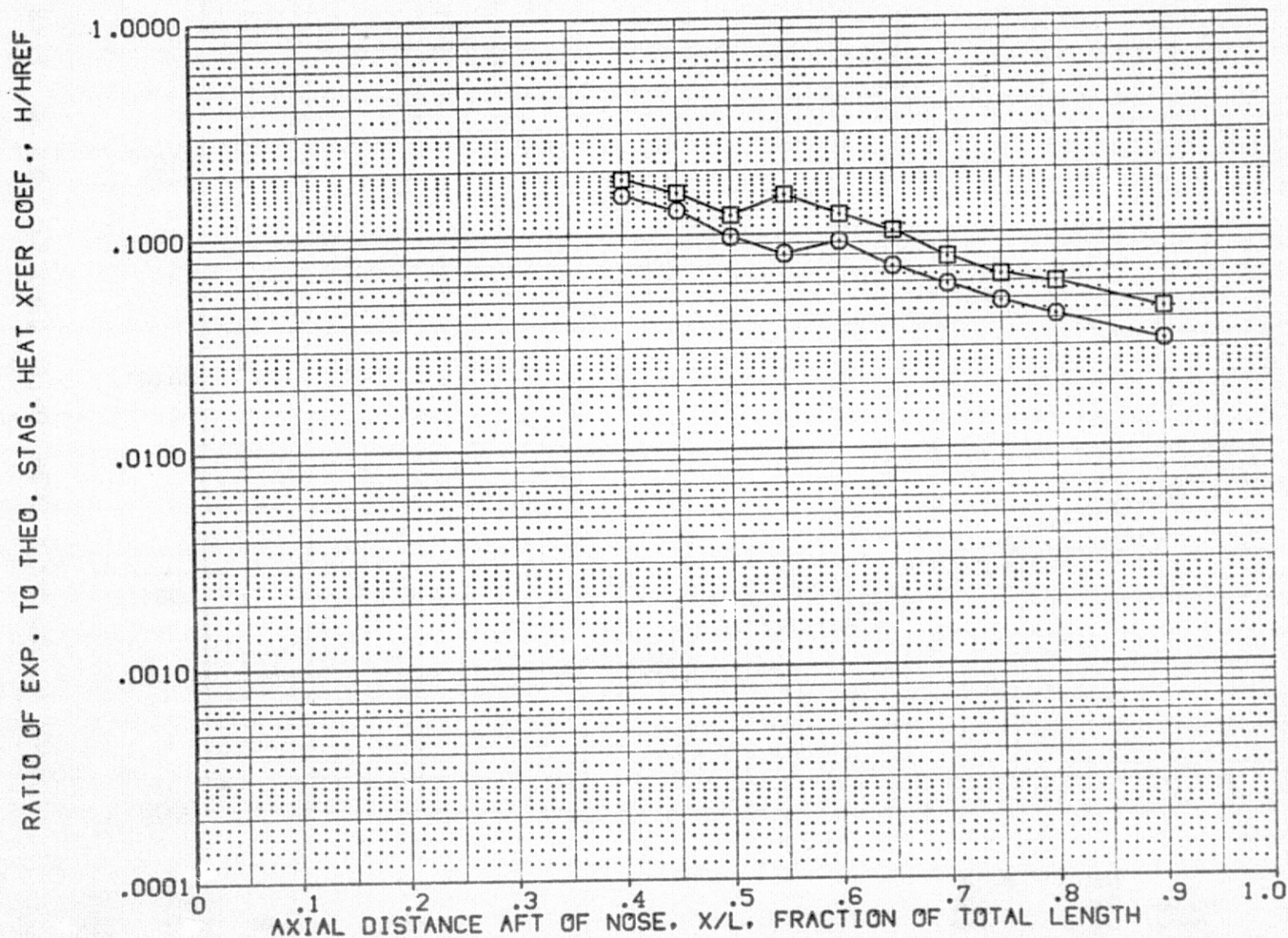


FIG. 40 INTEGRATED VEHICLE - ET SURFACE RN VARIATION WITH GRIT DH = .175

## IH16 089B+T8+S6+GRIT EXTERNAL TANK SURFACE

(CPQT15)

SYMBOL  
□ ○RN/L  
1.890  
4.620PHI  
180.000HAW/HT  
.900MACH  
BETA  
GRITNOPARAMETRIC VALUES  
3.700 ALPHA  
.000 DELTAH  
25.000.000  
.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

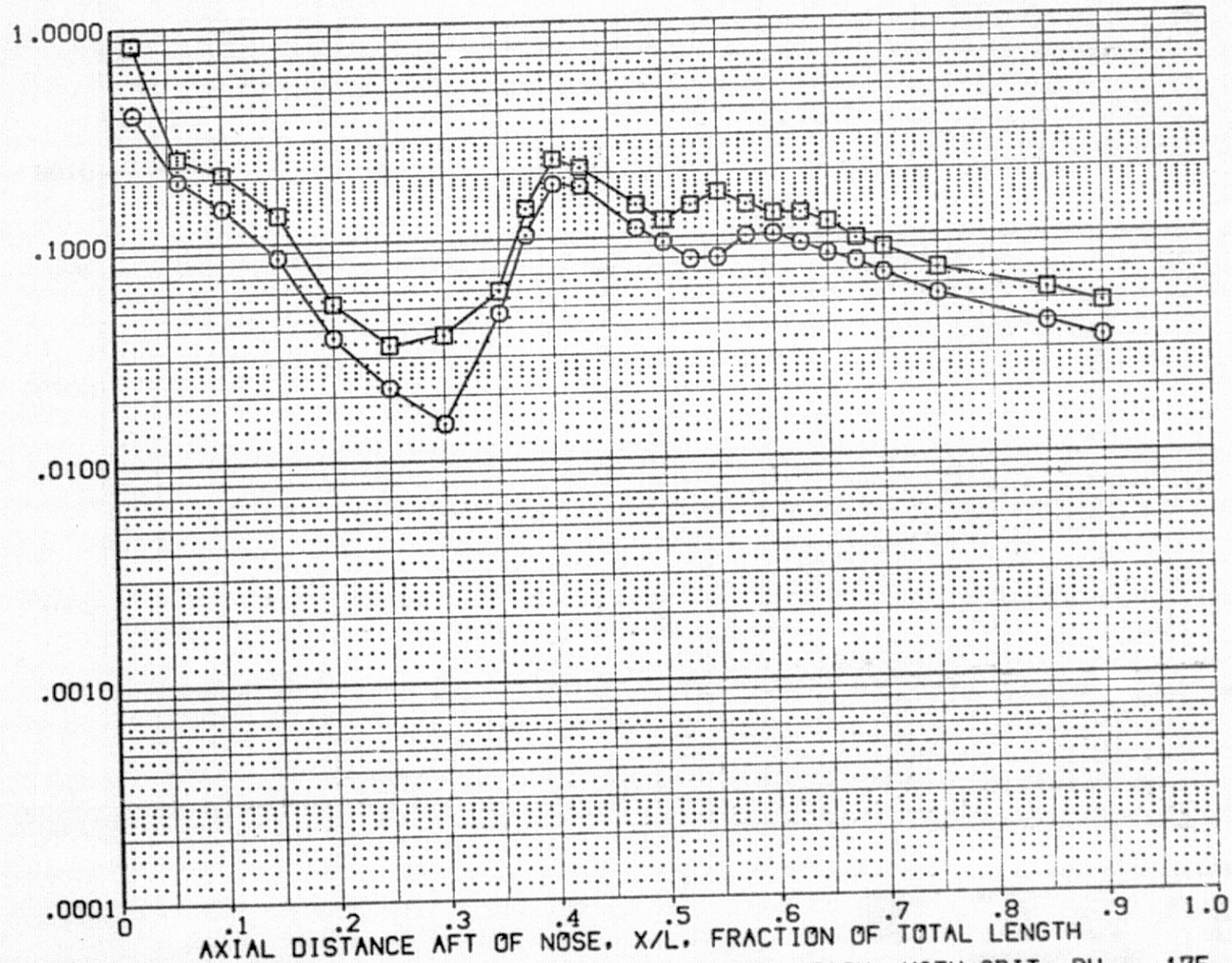


FIG. 40 INTEGRATED VEHICLE - ET SURFACE RN VARIATION WITH GRIT DH = .175



EXTERNAL TANK SURFACE

(CPQT03)

IH16 T8

PARAMETRIC VALUES  
MACH 3.700 ALPHA .000  
BETA .000

SYMBOL RN/L PHI HAV/HT  
□ 1.940 .000 .900  
□ 4.640

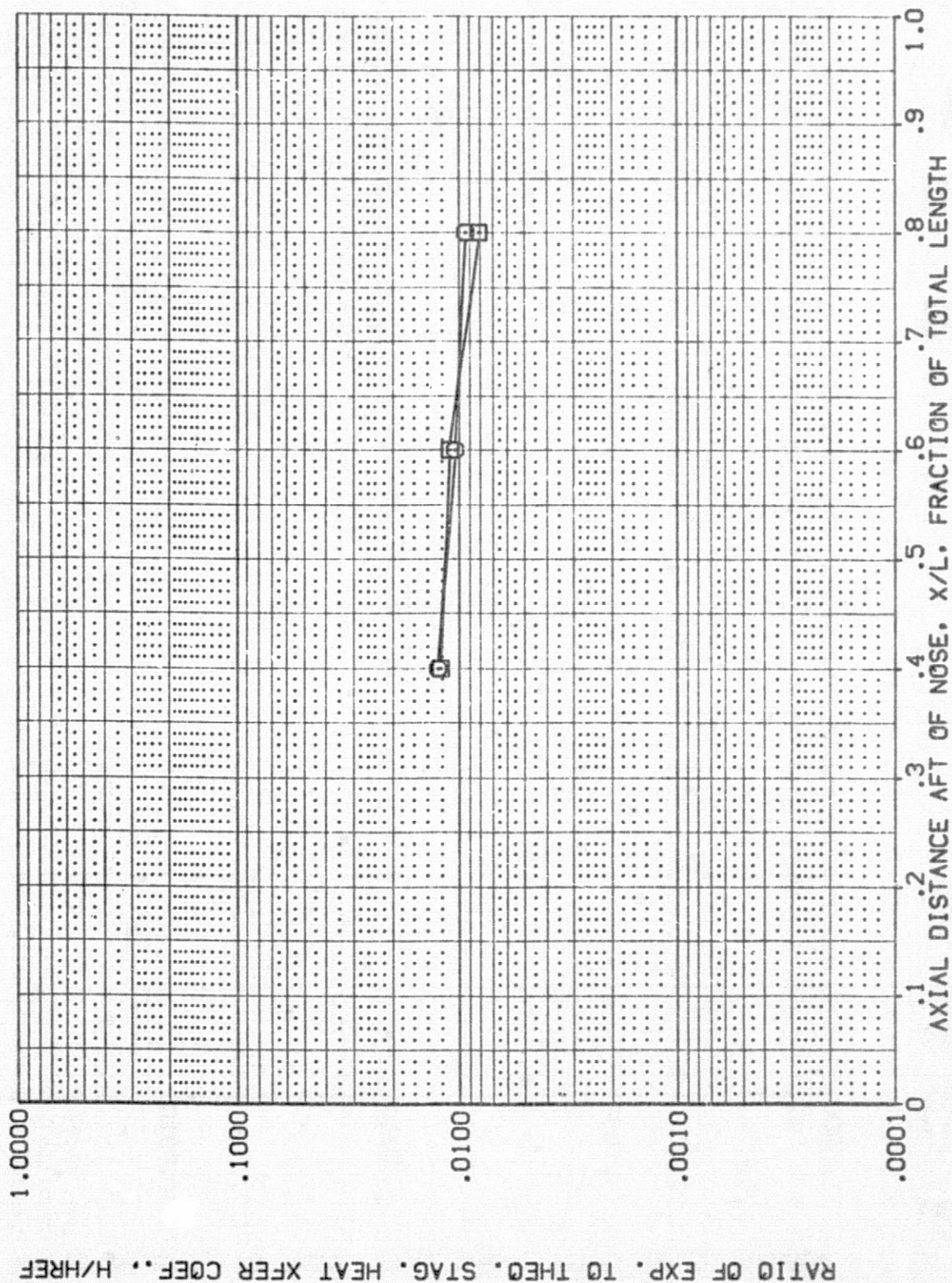


FIG. 41 ET ALONE  
RN VARIATION ALPHA = 0

IH16 T8

EXTERNAL TANK SURFACE

(CPQT03)

SYMBOL	RN/L	PHI	HAW/HT
○	1.940	45.000	.900
□	4.640		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000		

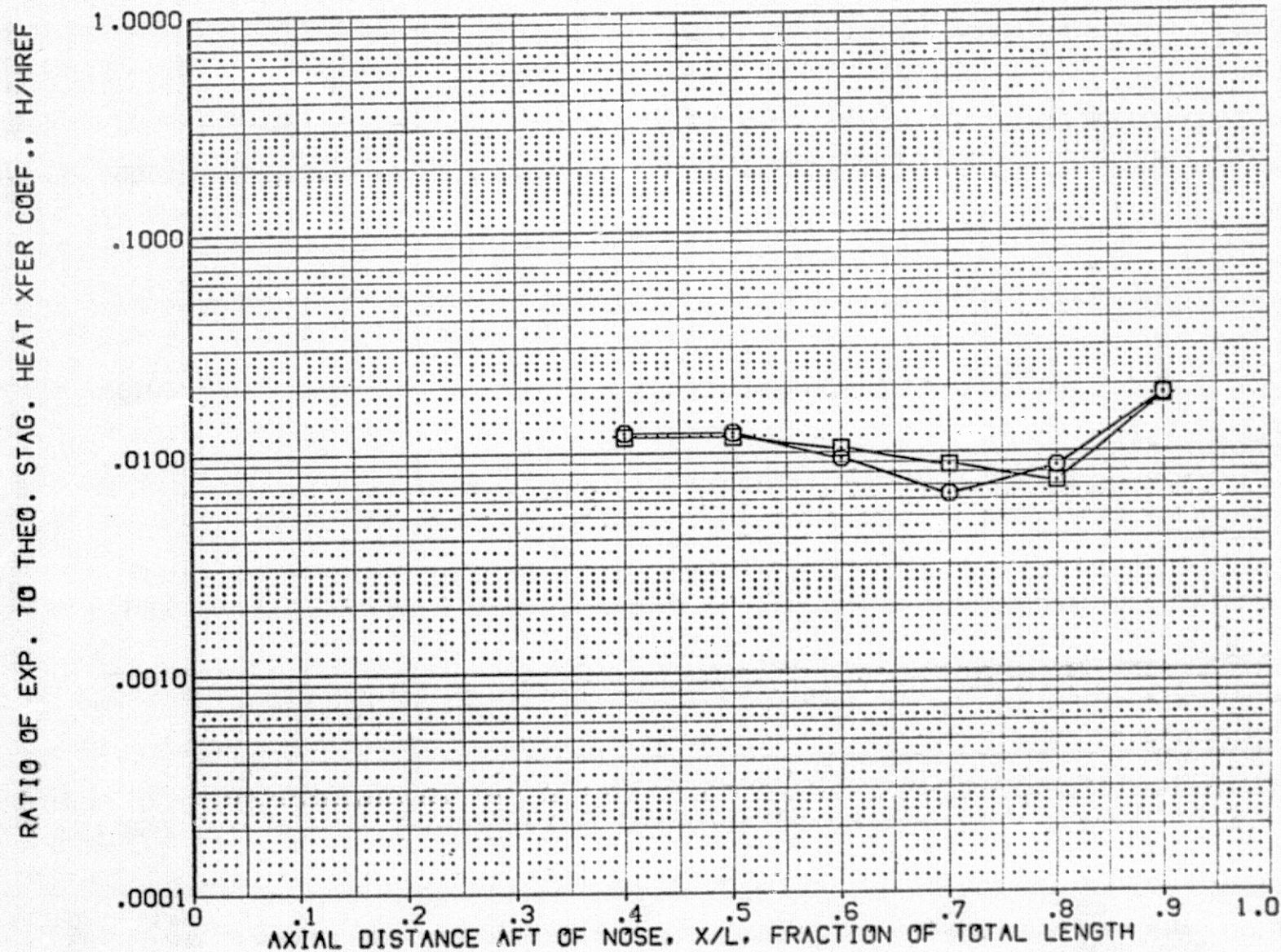


FIG. 41 ET ALONE

RN VARIATION ALPHA = 0



IH16 T8

EXTERNAL TANK SURFACE

(CPQT03)

SYMBOL	RN/L	PHI	HAV/HT
○	1.940	67.500	.900
□	4.640		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
ALPHA	.000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

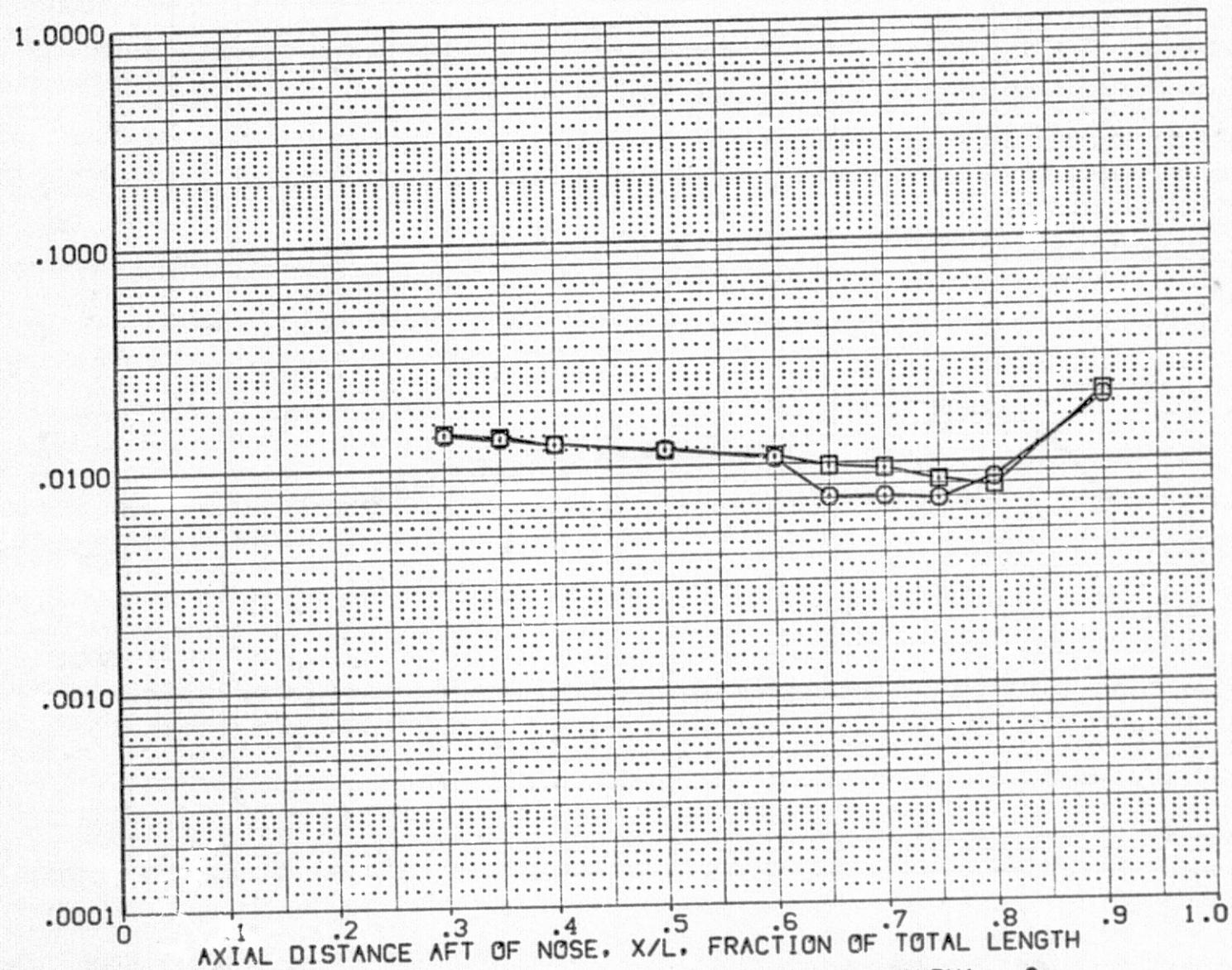


FIG. 41 ET ALONE

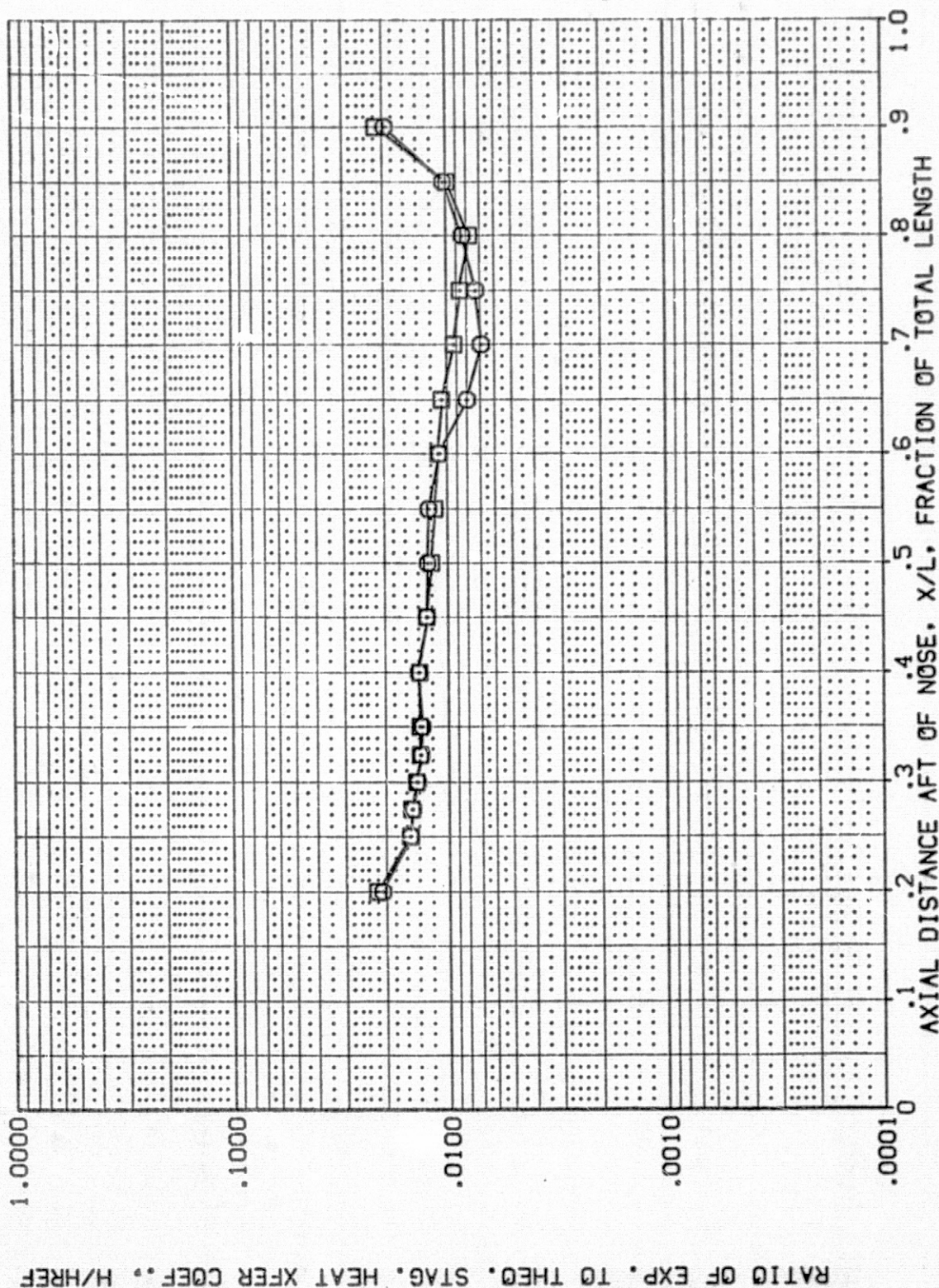
RN VARIATION, ALPHA = 0

# EXTERNAL TANK SURFACE (CPQT03)

IH16 T8

SYMBOL RV/L PHI HAV/HT  
 O 1.940 90.000 .900  
 □ 4.640

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000



RN VARIATION ALPHA = 0

FIG. 41 ET ALONE



IH16 T8

EXTERNAL TANK SURFACE

(CPQT03)

SYMBOL	RN/L	PHI	HAW/HT
○	1.940	112.500	.900
□	4.640		

PARAMETRIC VALUES		
MACH	BETA	ALPHA
3.700	.000	.000

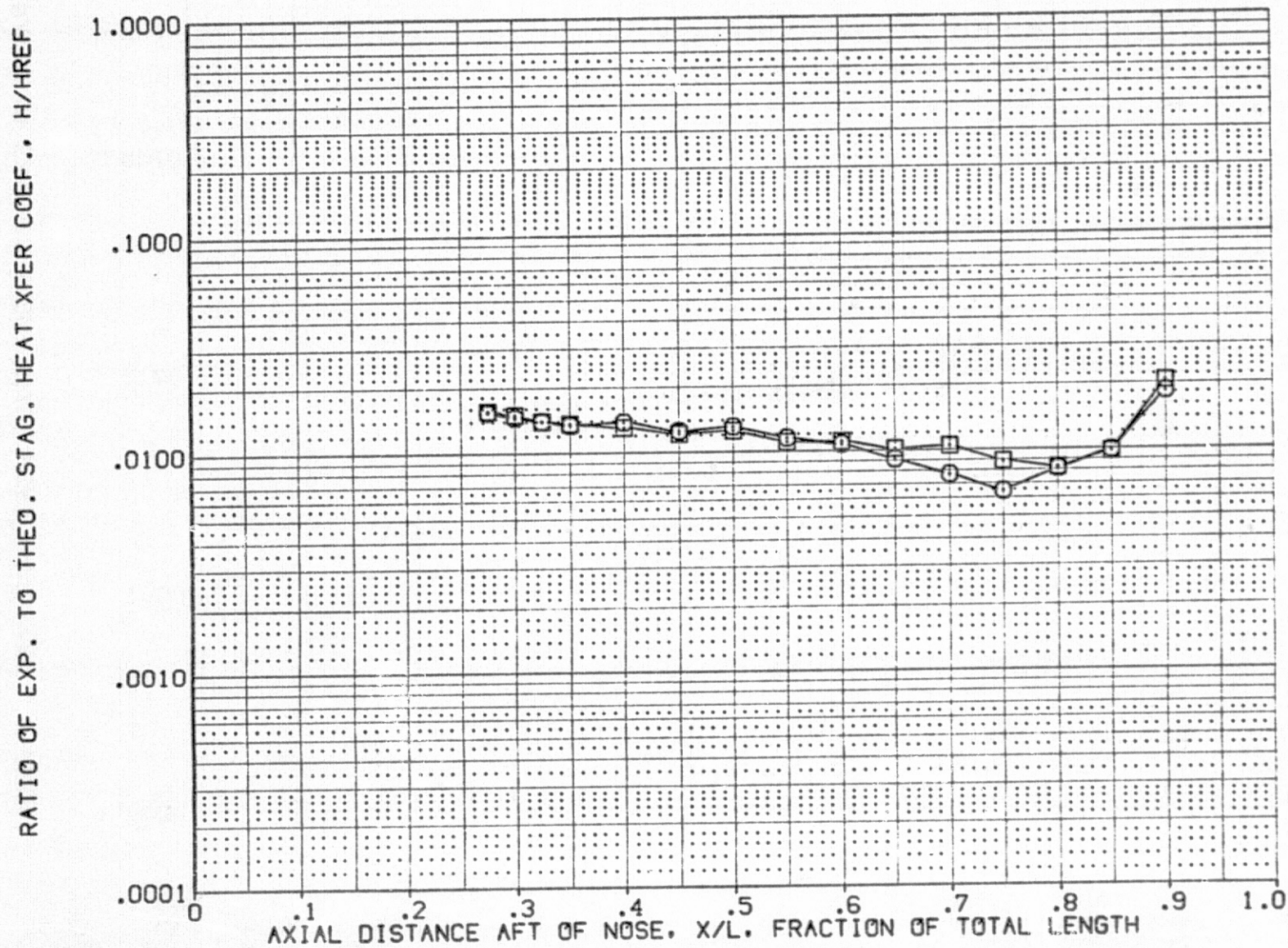


FIG. 41 ET ALONE

RN VARIATION ALPHA = 0

IH16		T8		EXTERNAL TANK SURFACE		(CPQT03)	
SYMBOL	RN/L	PHI	HAW/HT		MACH	PARAMETRIC VALUES	
○	1.940	135.000	.900		BETA	3.700	ALPHA
□	4.640					.000	.000

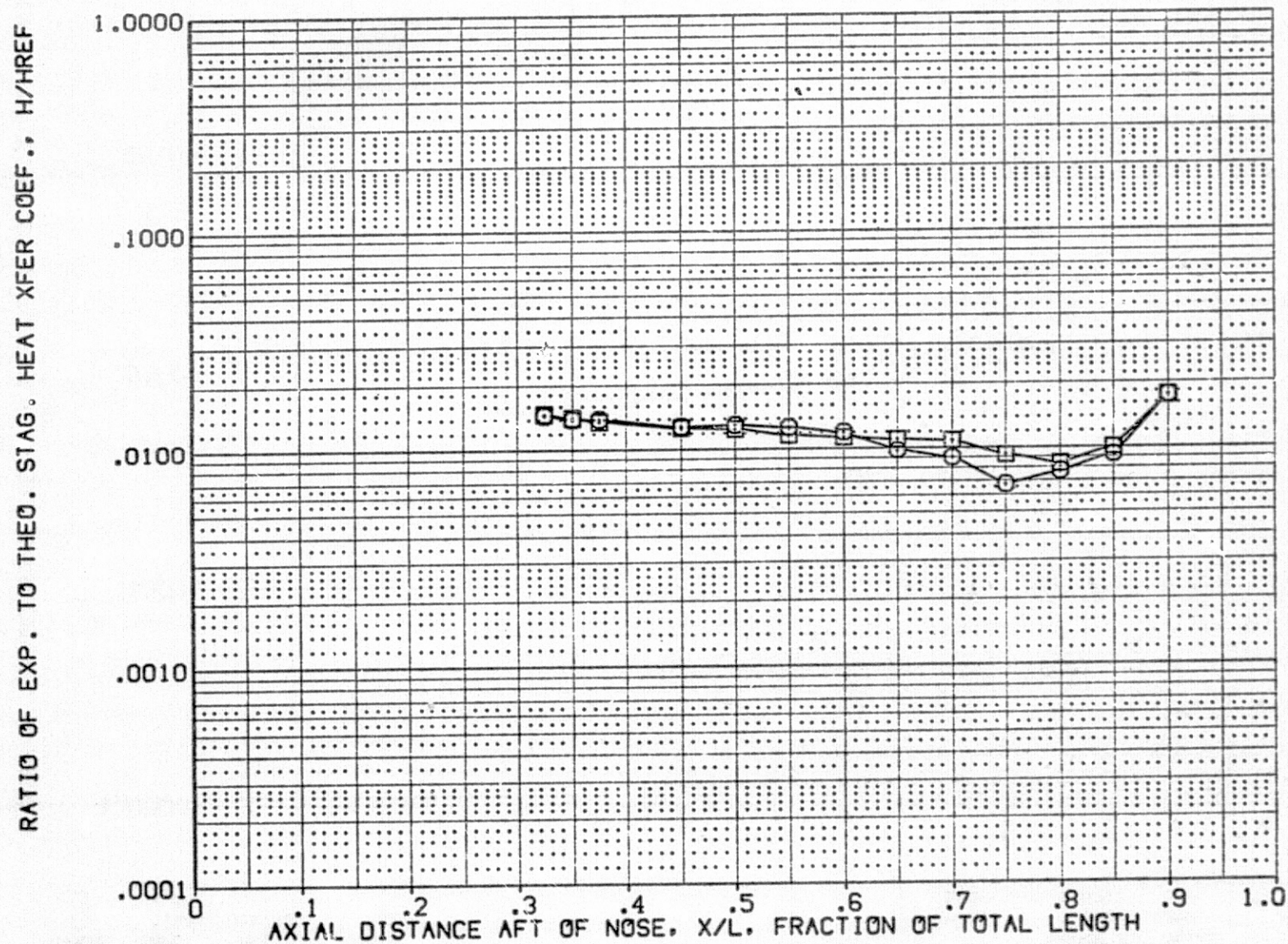


FIG. 41 ET ALONE

RN VARIATION ALPHA = 0



IH16

T8

## EXTERNAL TANK SURFACE

(CPQT03)

SYMBOL

RN/L

PHI

HAW/HT

MACH

PARAMETRIC VALUES

3.700

ALPHA

.000

□  
○1.940  
4.640

157.500

.900

BETA

.000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

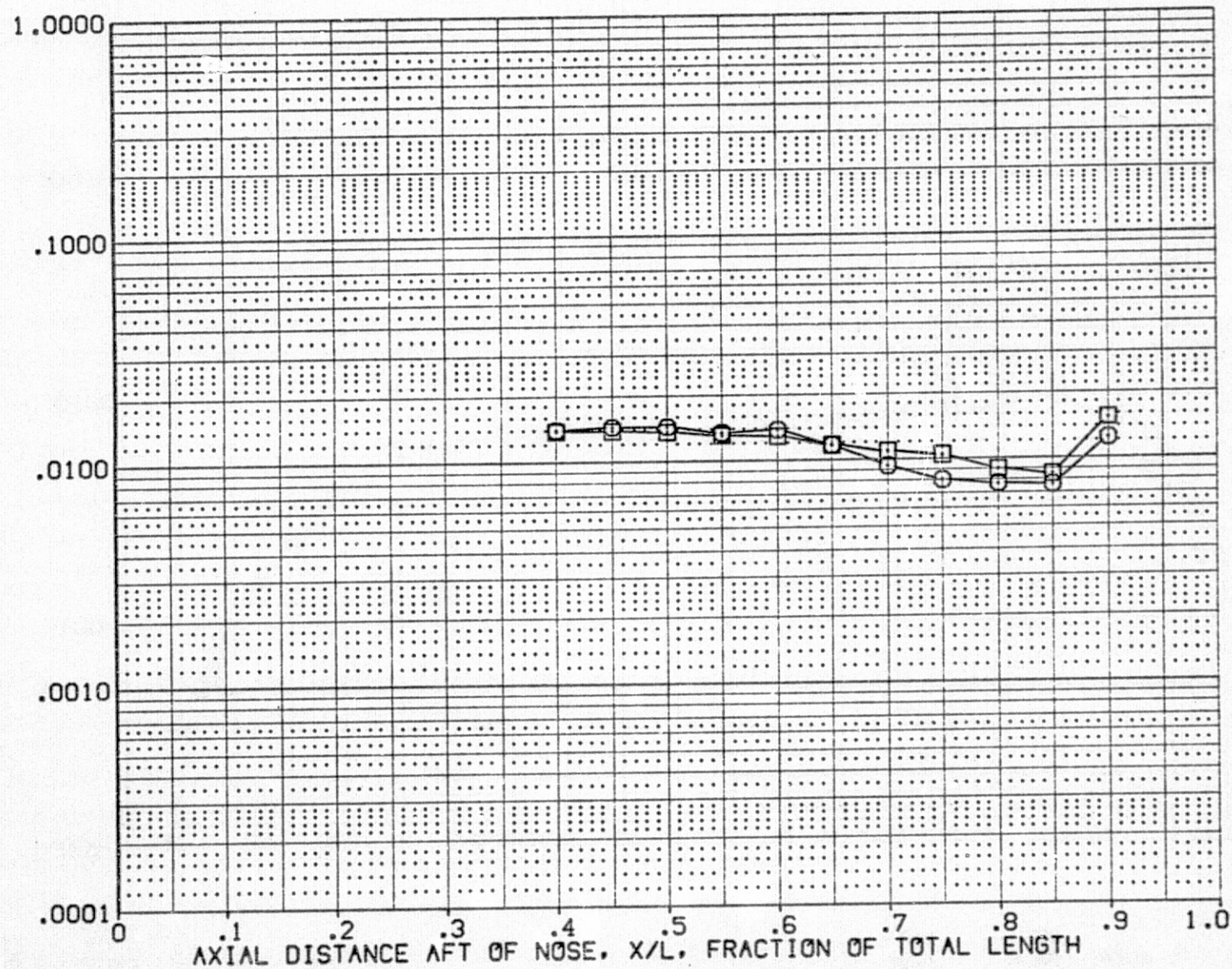


FIG. 41 ET ALONE

RN VARIATION ALPHA = 0

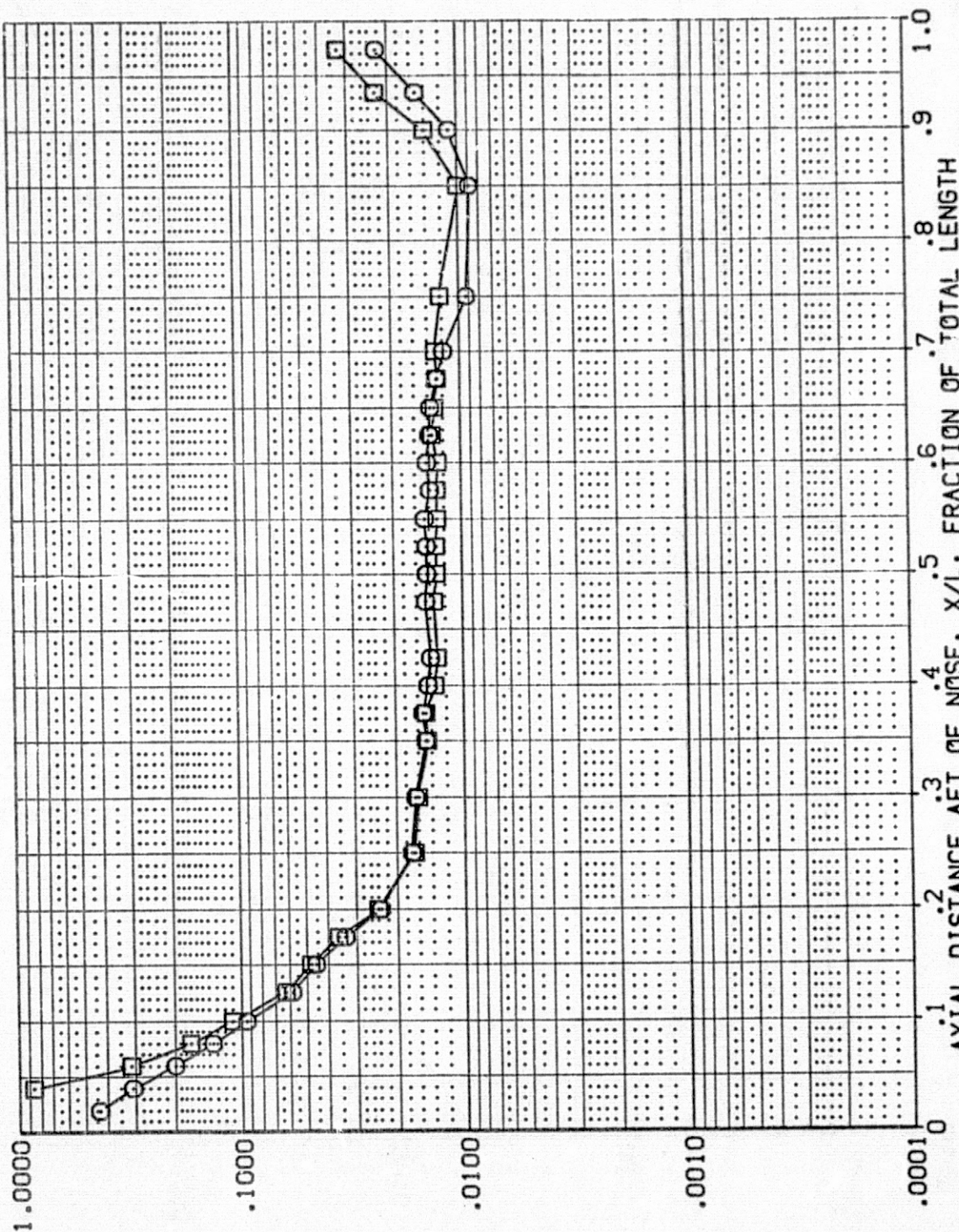
(CPQT03)

EXTERNAL TANK SURFACE

IH16 T8

SYMBOL RV/L PHI HAV/HT  
○ 1.940 180.000 .500  
□ 4.640

PARAMETRIC VALUES  
MACH 3.700 ALPHA .000  
BETA .000



RN VARIATION ALPHA = 0

FIG. 41 ET ALONE



IH16

T8

EXTERNAL TANK SURFACE

(CPQT04)

SYMBOL

RN/L

PHI

HAW/HT

MACH

PARAMETRIC VALUES

3.700

ALPHA

-5.000

○  
□

1.940

.000

.900

BETA

.000

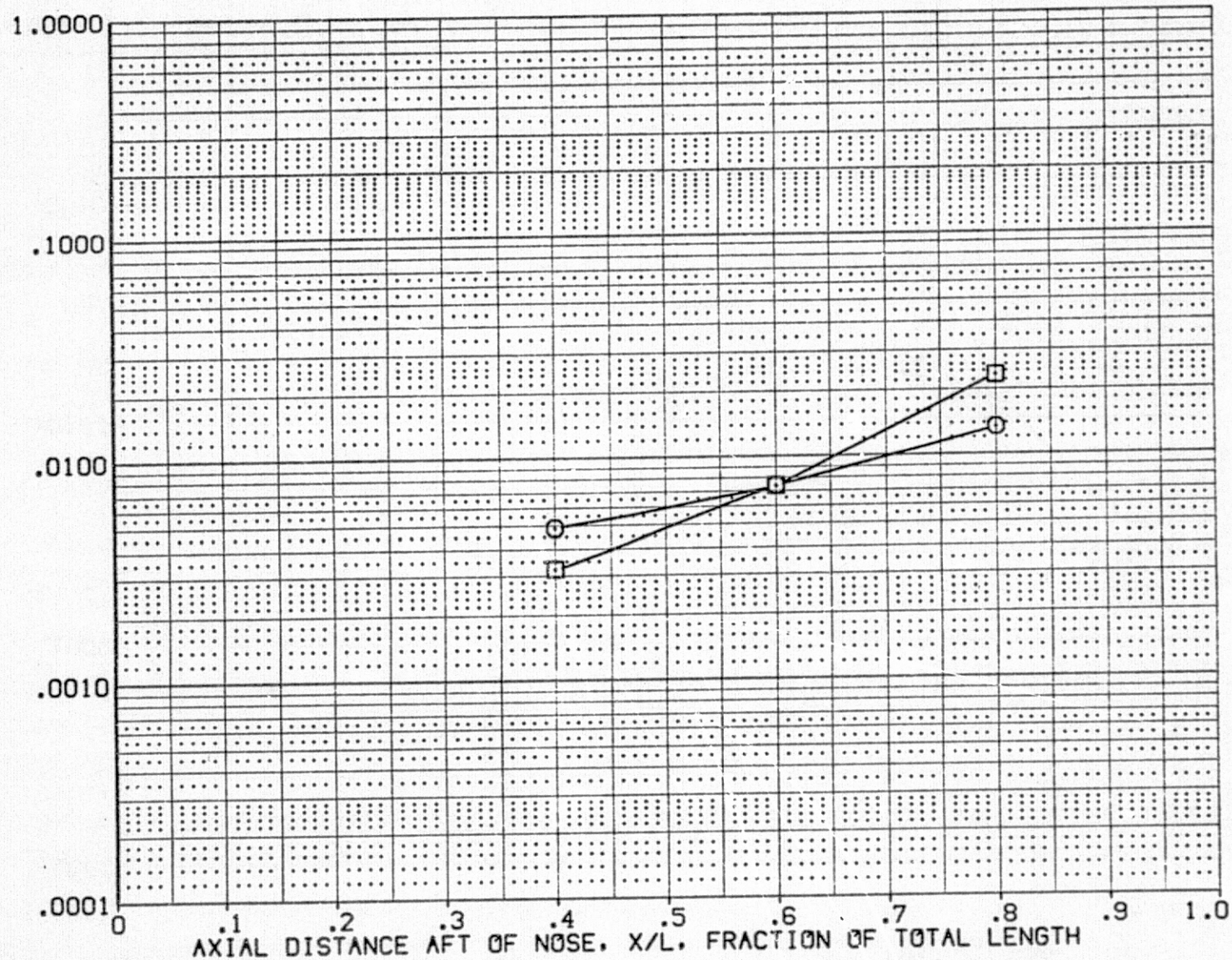
RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $H/H_{REF}$ 

FIG. 42 ET ALONE

RN VARIATION ALPHA = -5

IH16 T8

EXTERNAL TANK SURFACE

(CPQT04)

SYMBOL	RN/L	PHI	HAW/HT
○	1.940	45.000	.900
□	4.630		

MACH	BETA
3.700	.000

PARAMETRIC VALUES

ALPHA

-5.000

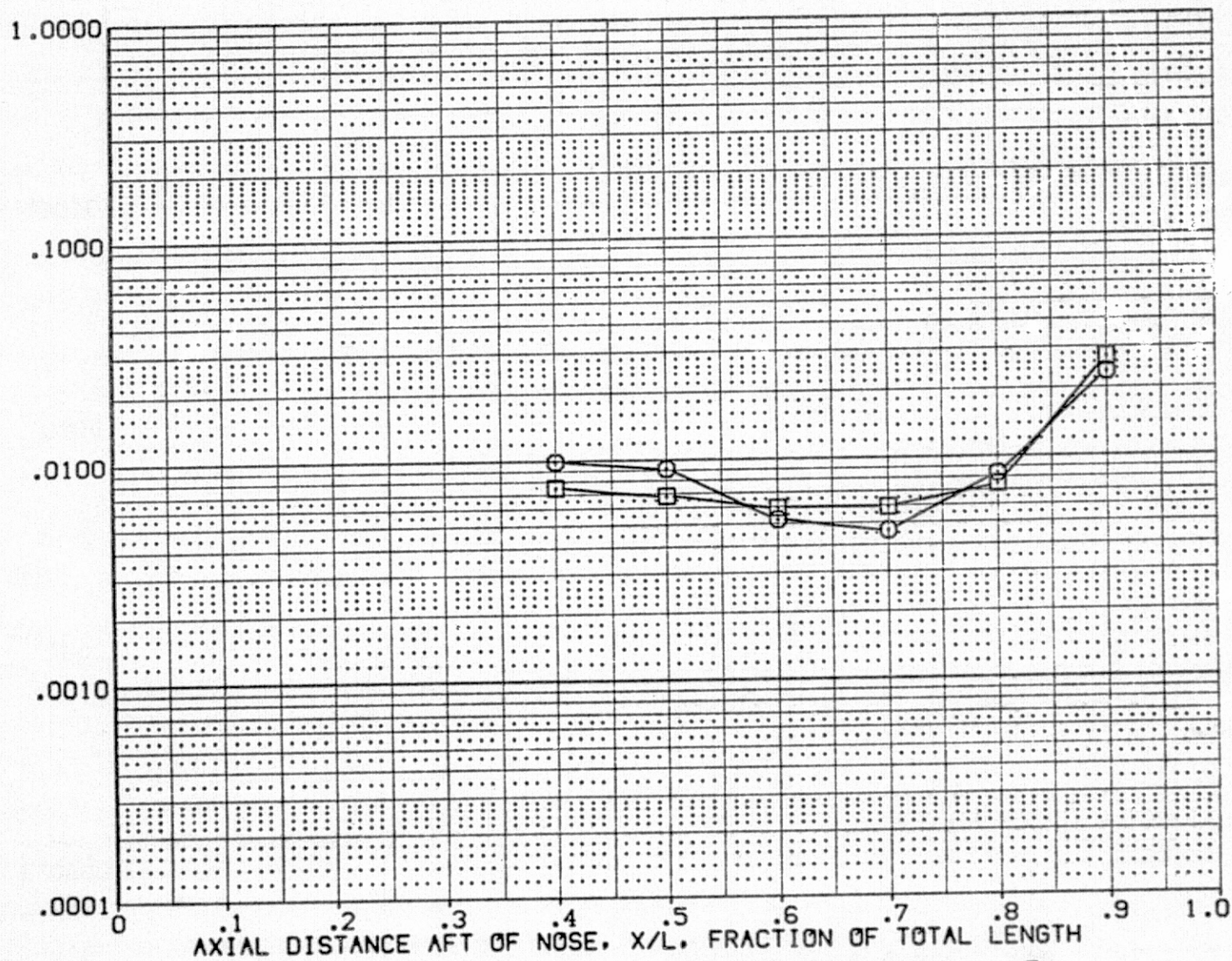
RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.  $H/H_{REF}$ 

FIG. 42 ET ALONE

RN VARIATION ALPHA = -5



IH16 T8

EXTERNAL TANK SURFACE

(CPQT04)

SYMBOL	RN/L	PHI	HAW/HT
○	1.940	67.500	.900
□	4.630		

PARAMETRIC VALUES		
MACH	3.700	ALPHA
BETA	.000	-5.000

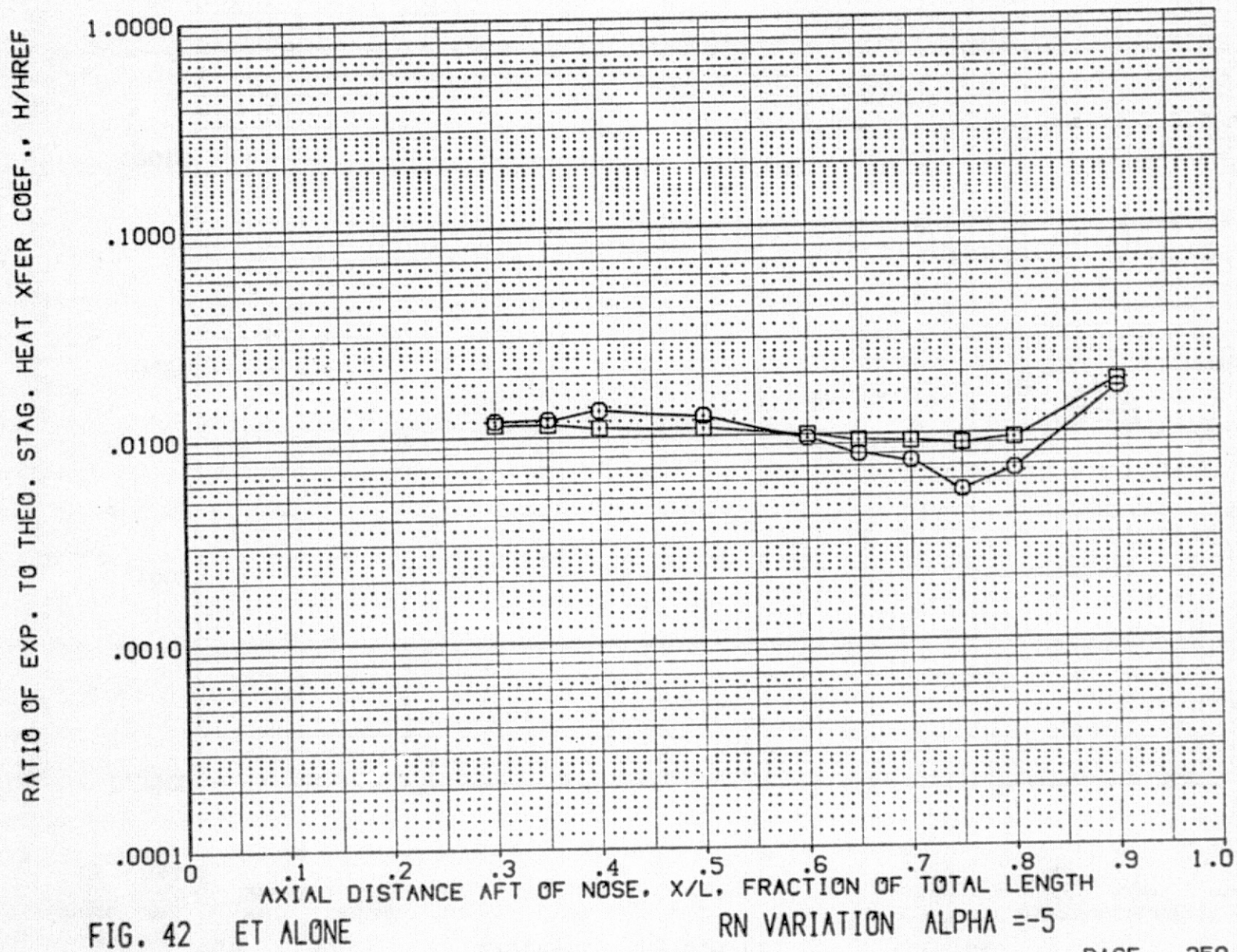


FIG. 42 ET ALONE

IH16		T8		EXTERNAL TANK SURFACE		(CPQT04)	
SYMBOL	RV/L	PHI	HAY/HT			PARAMETRIC VALUES	
○	1.940	90.000	.900			MACH	3.700
□	4.630					BETA	.000
						ALPHA	-5.000

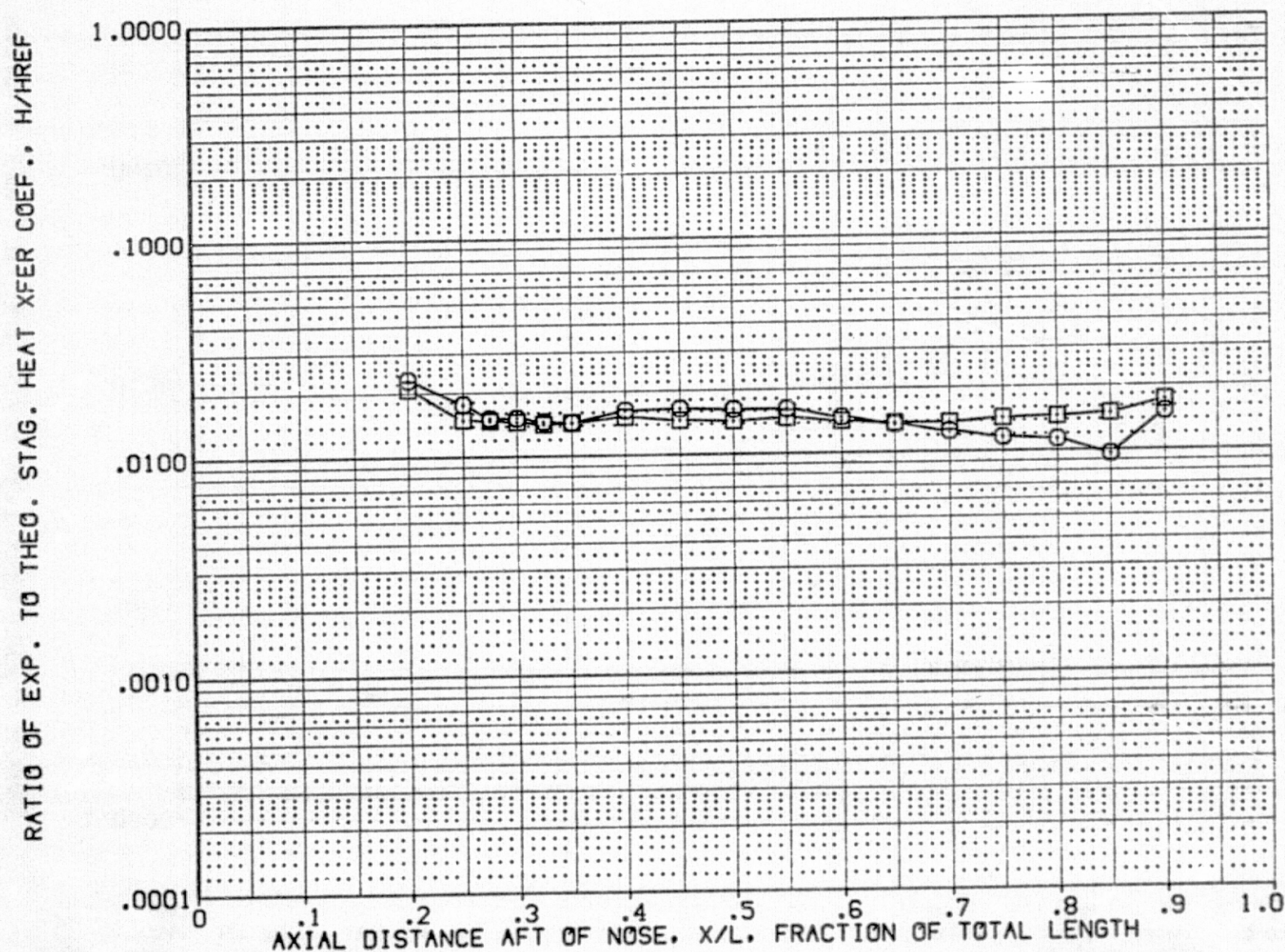


FIG. 42 ET ALONE

RN VARIATION ALPHA = -5



IH16

T8

EXTERNAL TANK SURFACE

(CPQT04)

SYMBOL	RN/L	PHI	HAW/HT
○	1.940	112.500	.900
□	4.630		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	-5.000
BETA	.000		

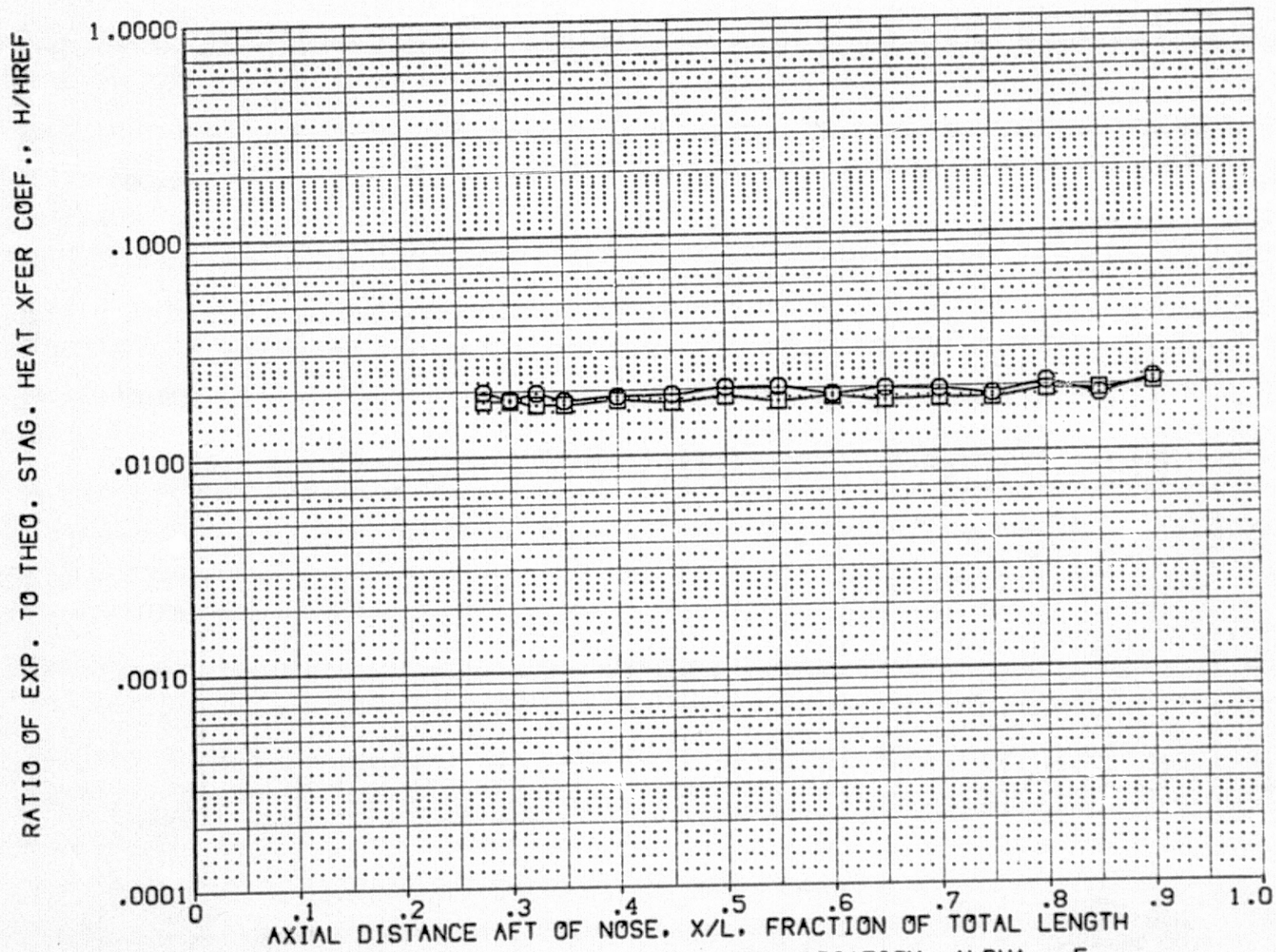


FIG. 42 ET ALONE

RN VARIATION ALPHA = -5

IH16		T8		EXTERNAL TANK SURFACE		(CPQT04)	
SYMBOL	RN/L	PHI	HAW/HT			PARAMETRIC VALUES	
□	1.940	135.000	.900			MACH	3.700
	4.630					BETA	.000
						ALPHA	-5.000

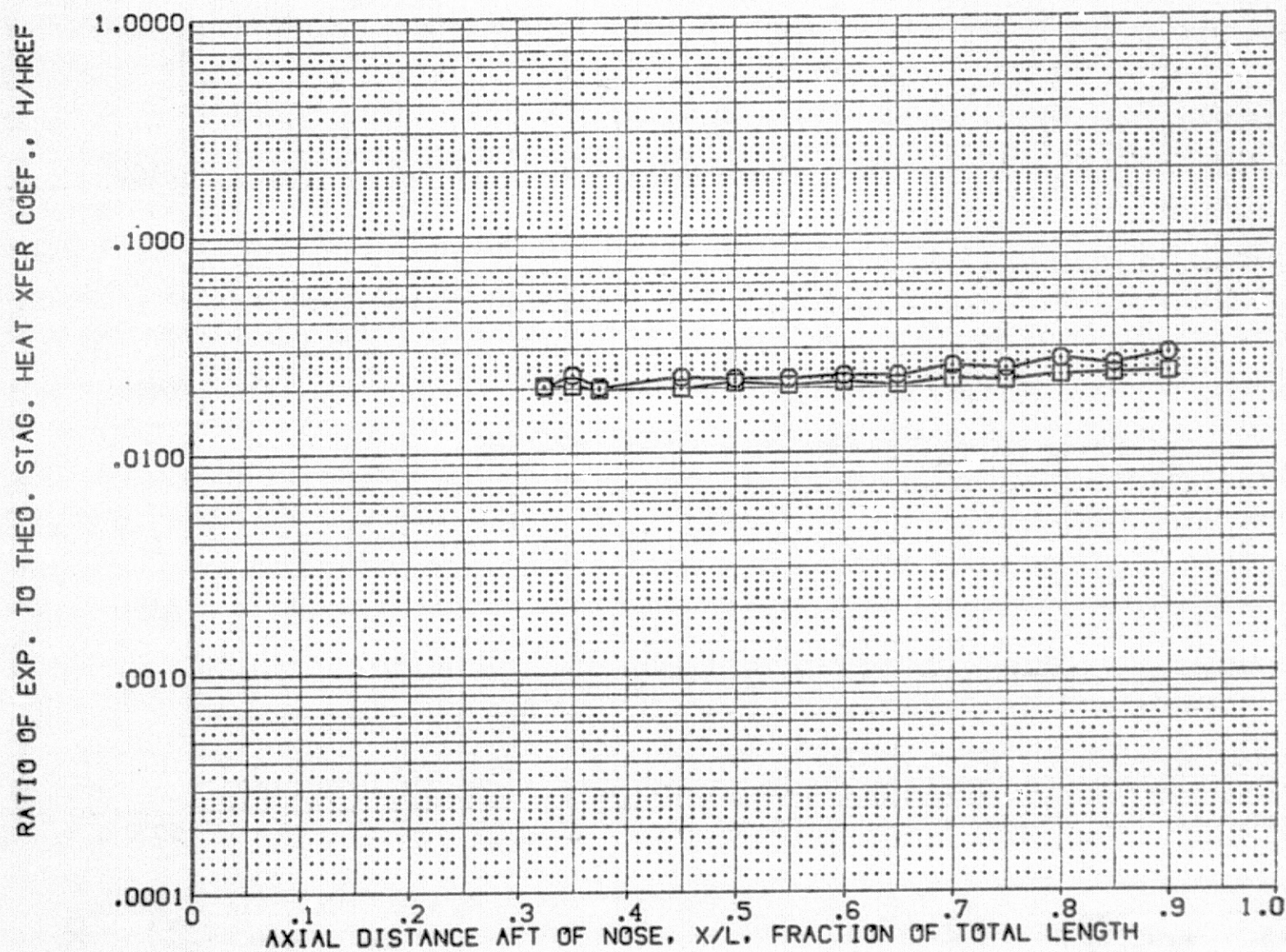


FIG. 42 ET ALONE

RN VARIATION ALPHA = -5



EXTERNAL TANK SURFACE

(CP0T04)

IH16 T8

PARAMETRIC VALUES  
3.700 ALPHA  
-5.000

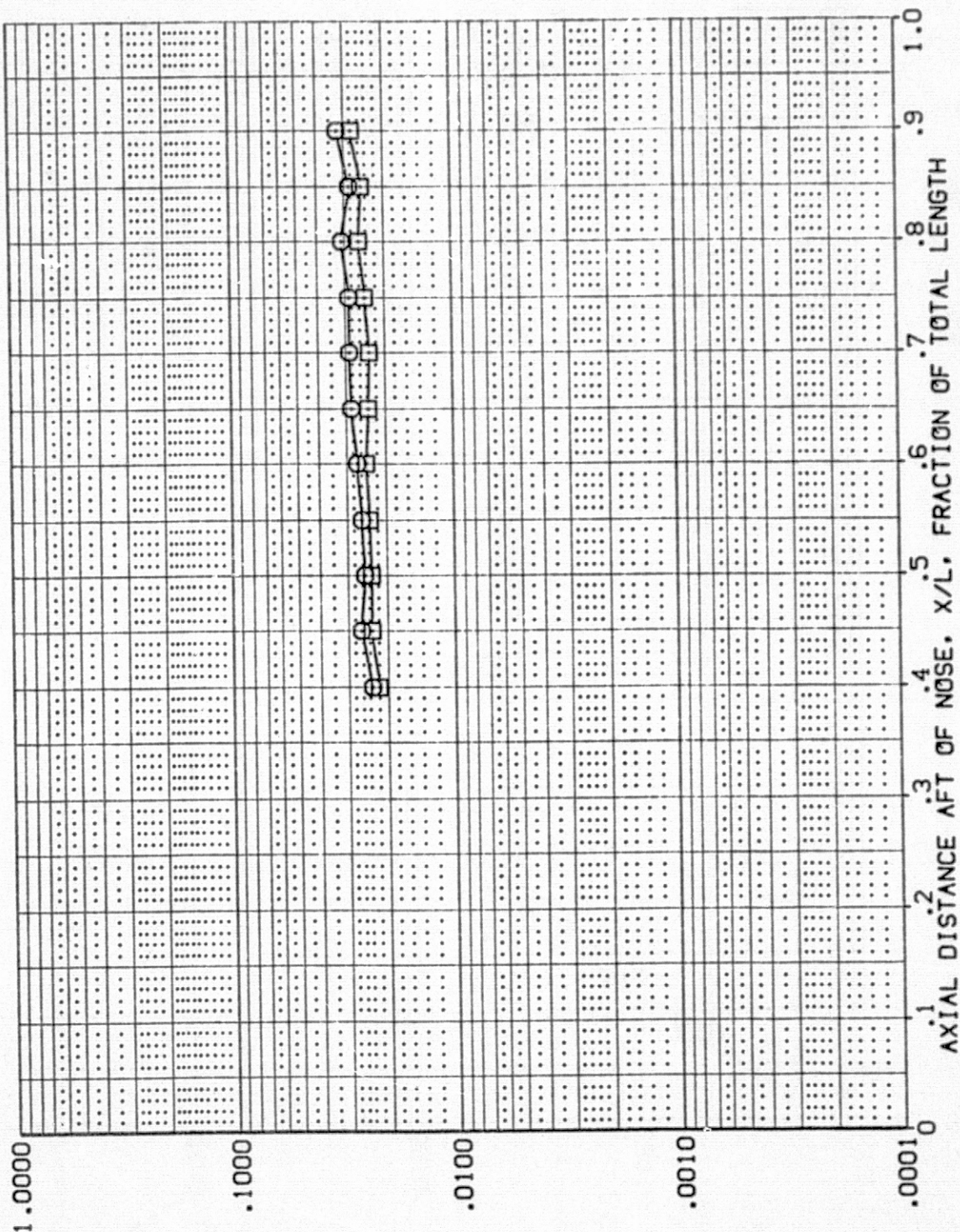
MACH  
BETA

HAV/HT  
.900

PHI  
157.500

RV/L  
1.940  
4.630

SYMBOL  
□



RN VARIATION ALPHA = -5

FIG. 42 ET ALONE

IH16 T8

EXTERNAL TANK SURFACE

(CPQT04)

SYMBOL	RN/L	PHI	HAW/HT
○	1.940	180.000	.900
□	4.630		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	-5.000
BETA	.000		

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF. H/HREF

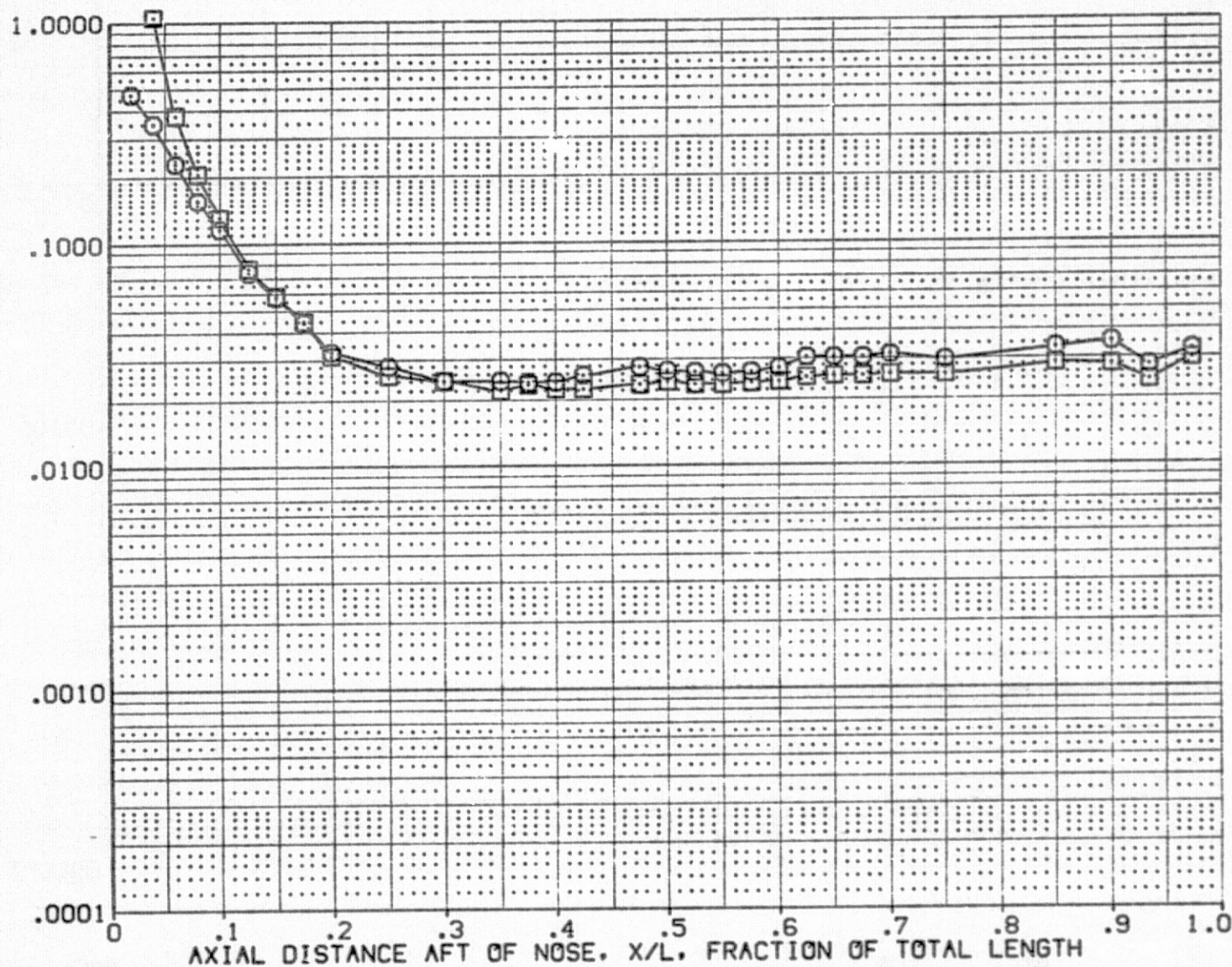


FIG. 42 ET ALONE

RN VARIATION ALPHA = -5



IH16 T8 + GRIT

EXTERNAL TANK SURFACE

(CPQT18)

SYMBOL  
□  
○RN/L  
1.940  
4.580PHI  
.000HAW/HT  
.900MACH  
BETA

PARAMETRIC VALUES

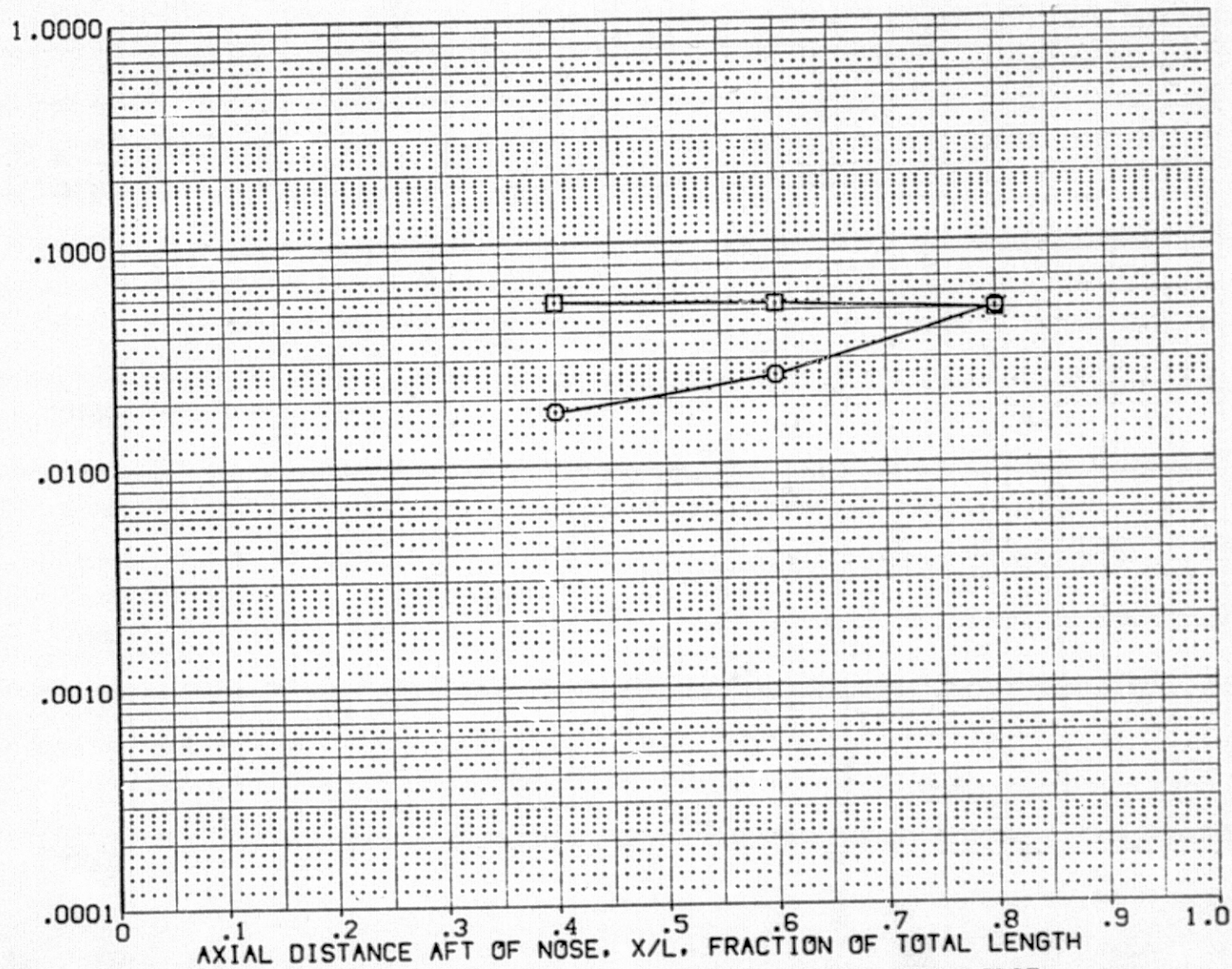
3.700  
.000ALPHA  
GRITNO.000  
25.000RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $H/H_{REF}$ 

FIG. 43 ET ALONE

RN VARIATION WITH GRIT

IH16 T8 + GRIT

EXTERNAL TANK SURFACE

(CPQT18)

SYMBOL

RN/L

PHI

HAW/HT

MACH

PARAMETRIC VALUES

3.700

ALPHA

.000

BETA

.000

GRITNG

25.000

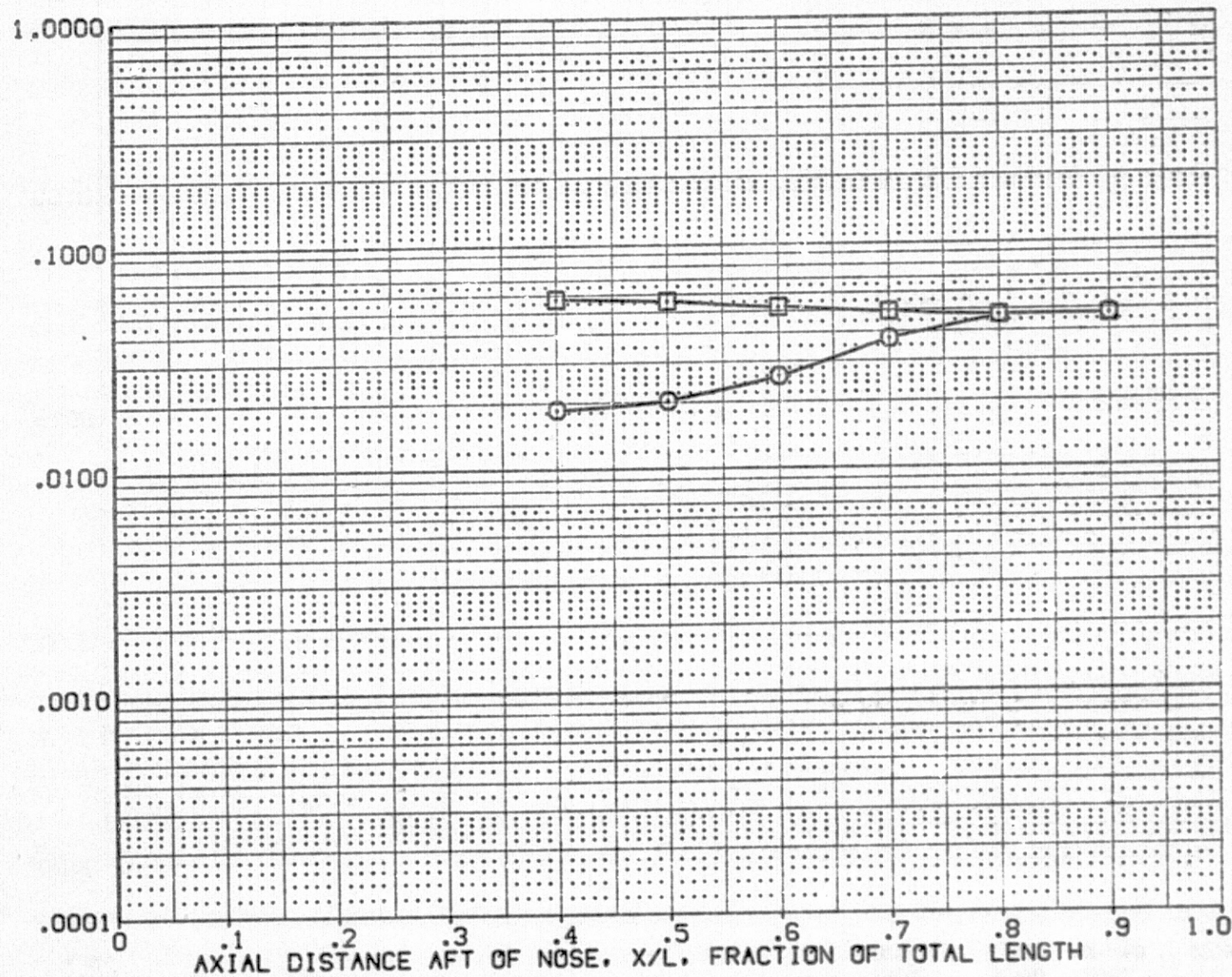
RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $H/H_{REF}$ 

FIG. 43 ET ALONE

RN VARIATION WITH GRIT



IH16 T8 + GRIT

EXTERNAL TANK SURFACE

(CPQT18)

SYMBOL	RN/L	PHI	HAW/HT
○	1.940	67.500	.900
□	4.580		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	GRITNO	25.000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

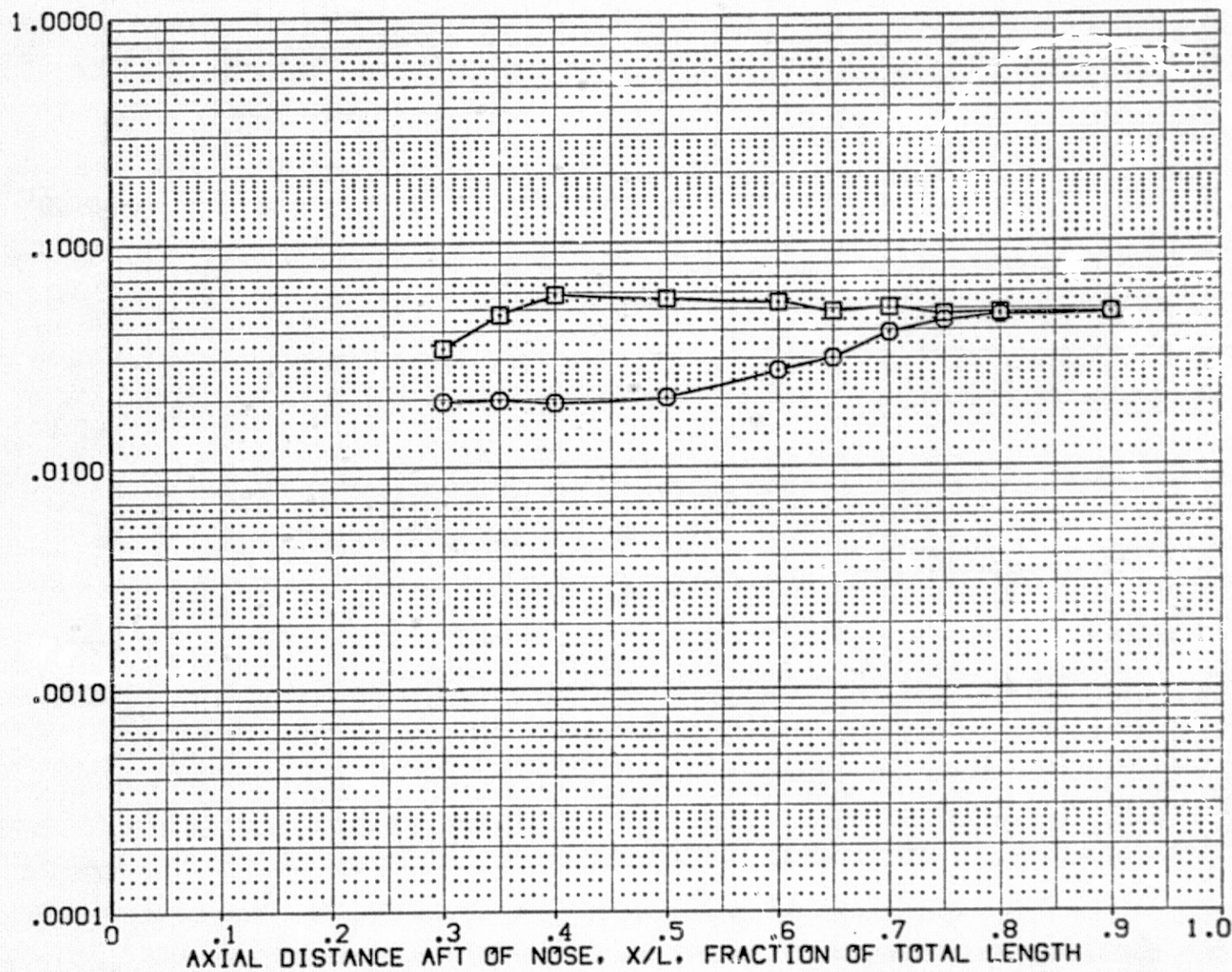


FIG. 43 ET ALONE

RN VARIATION WITH GRIT

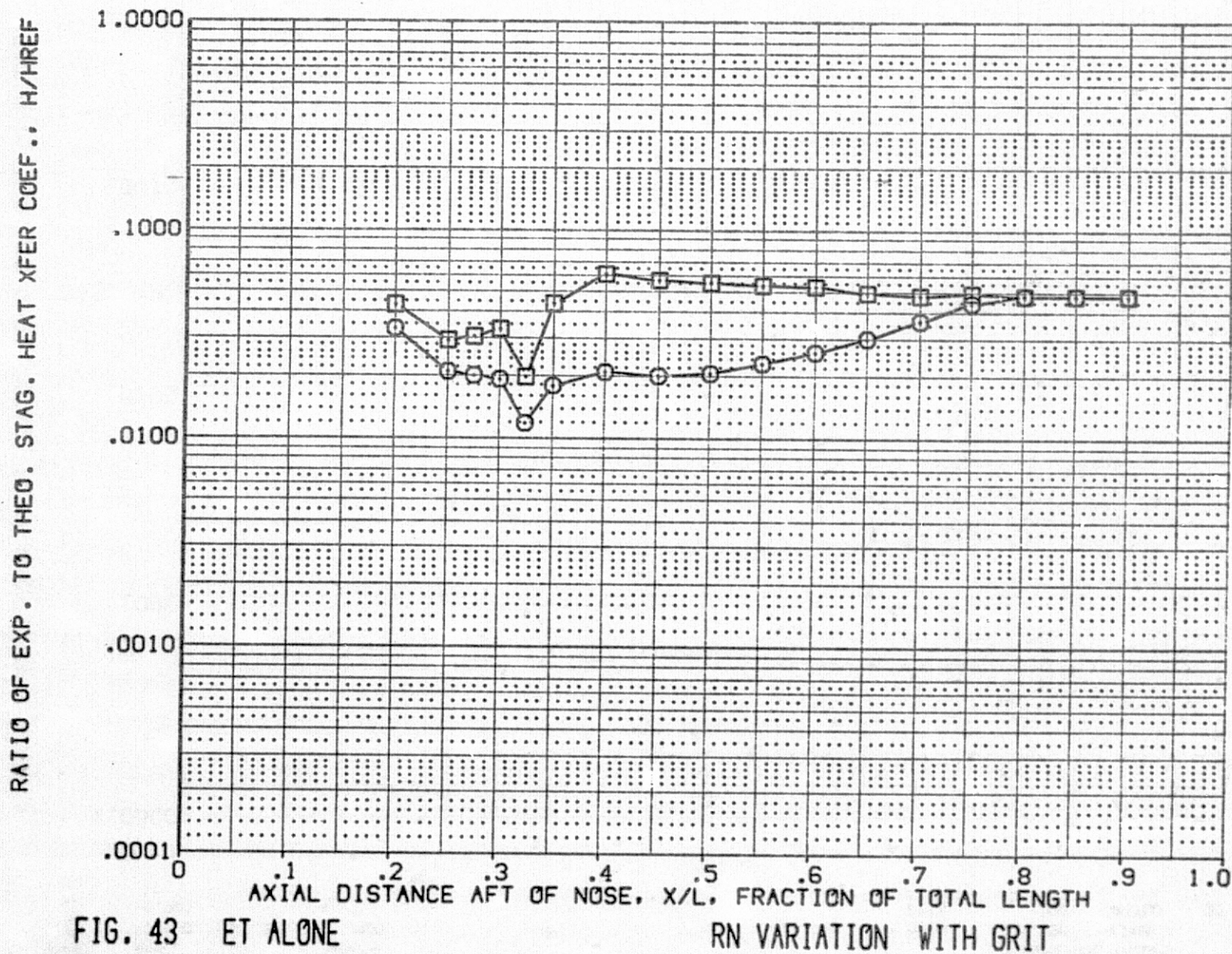
IH16 T8 + GRIT

EXTERNAL TANK SURFACE

(CPQT18)

SYMBOL	RN/L	PHI	HAW/HT
○	1.940	90.000	.900
□	4.580		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	GRITNG	25.000





IH16 T8 + GRIT

EXTERNAL TANK SURFACE

(CPQT18)

SYMBOL	RN/L	PHI	HAV/HT
○	1.940	112.500	.900
□	4.580		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	GRITNO	25.000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

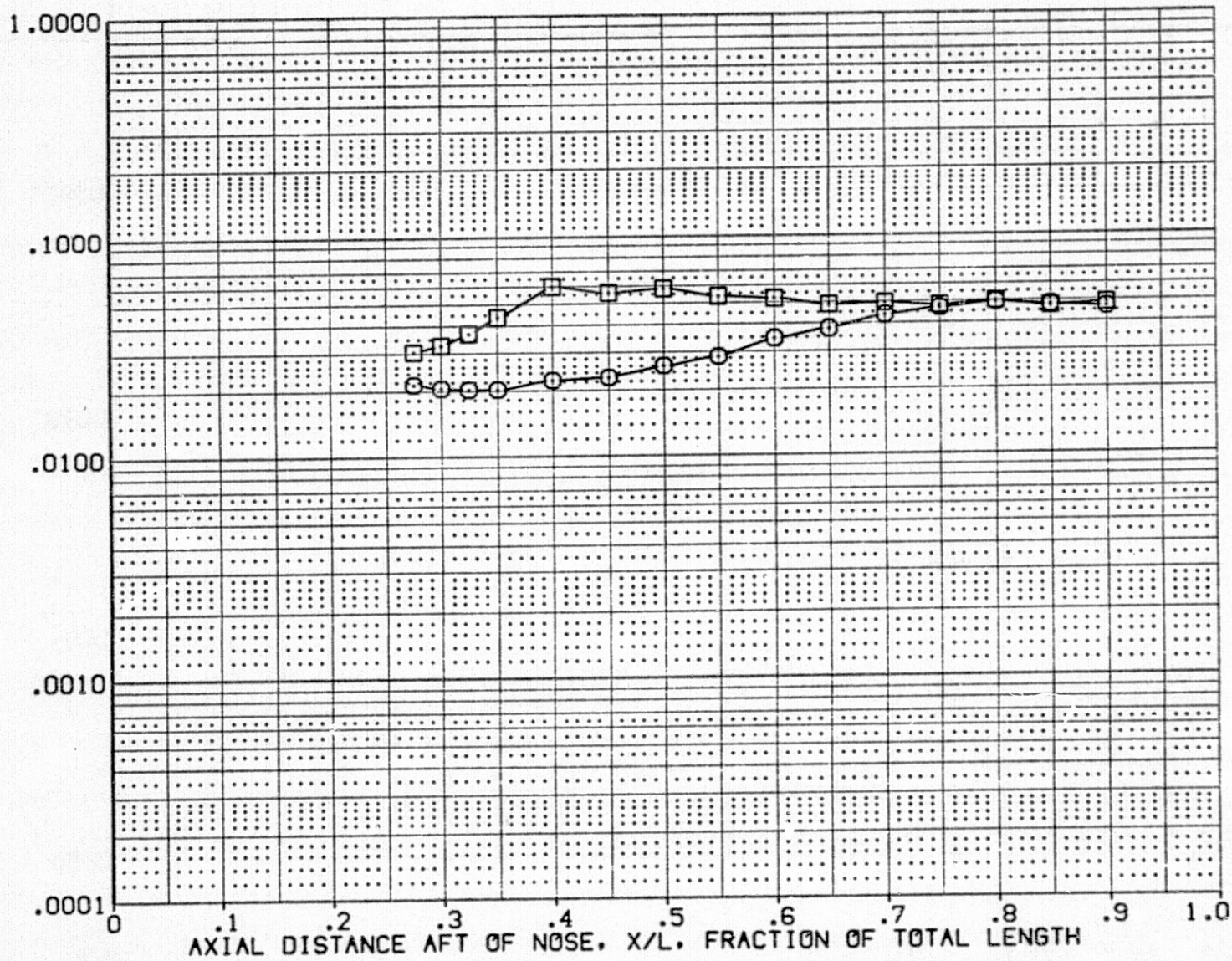


FIG. 43 ET ALONE

RN VARIATION WITH GRIT

IH16 T8 + GRIT

EXTERNAL TANK SURFACE

(CPQT18)

SYMBOL

RN/L

PHI

HAW/HT

PARAMETRIC VALUES

○  
□1.940  
4.580

135.000

.900

MACH  
BETA3.700  
.000ALPHA  
GRITN3.000  
25.000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

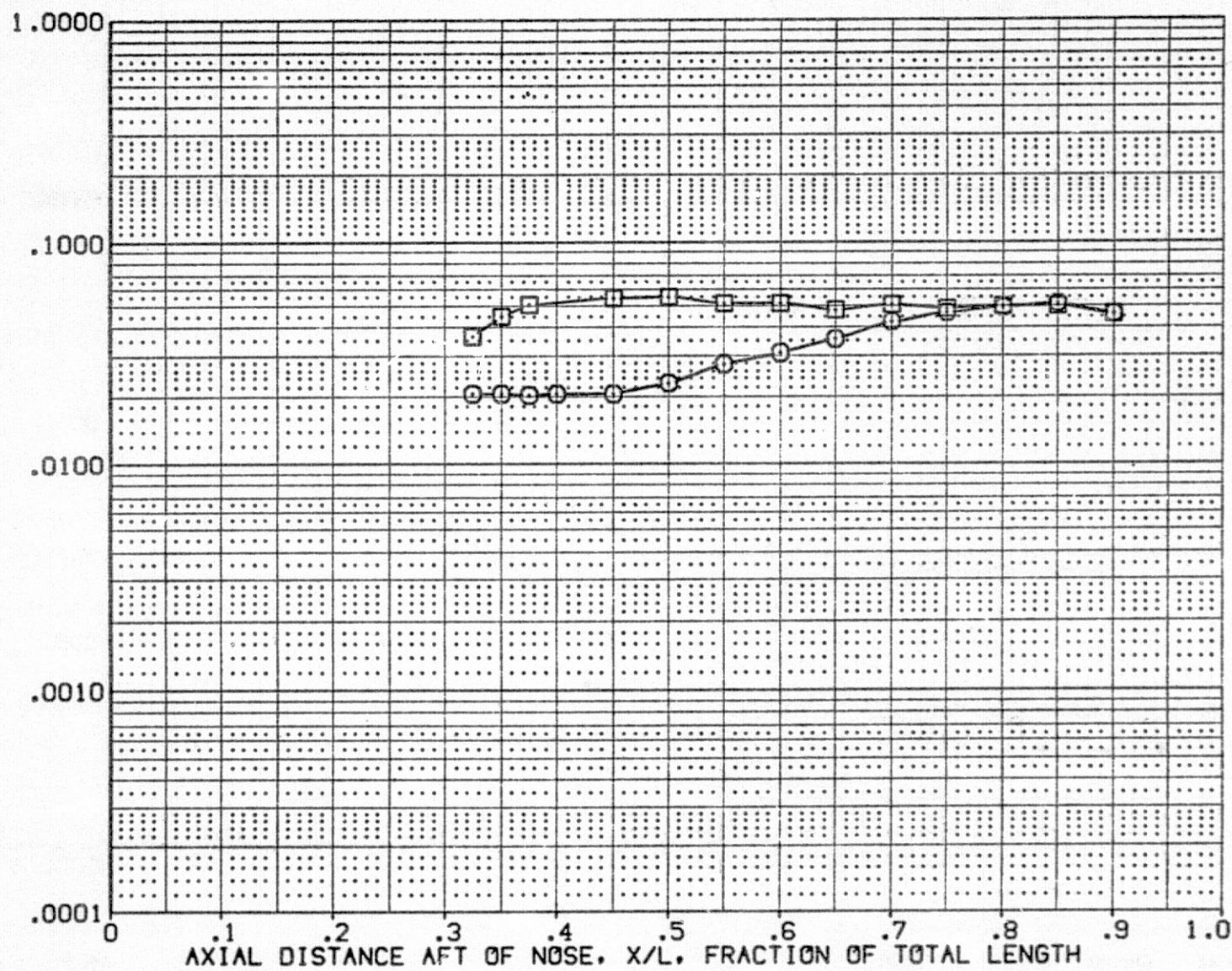


FIG. 43 ET ALONE

RN VARIATION WITH GRIT



IH16 T8 + GRIT

EXTERNAL TANK SURFACE

(CPQT18)

SYMBOL

RN/L

PHI

HAW/HT

MACH

PARAMETRIC VALUES

3.700

ALPHA

.000

○  
□1.940  
4.580

157.500

.900

BETA

.000

GRITNO

25.000

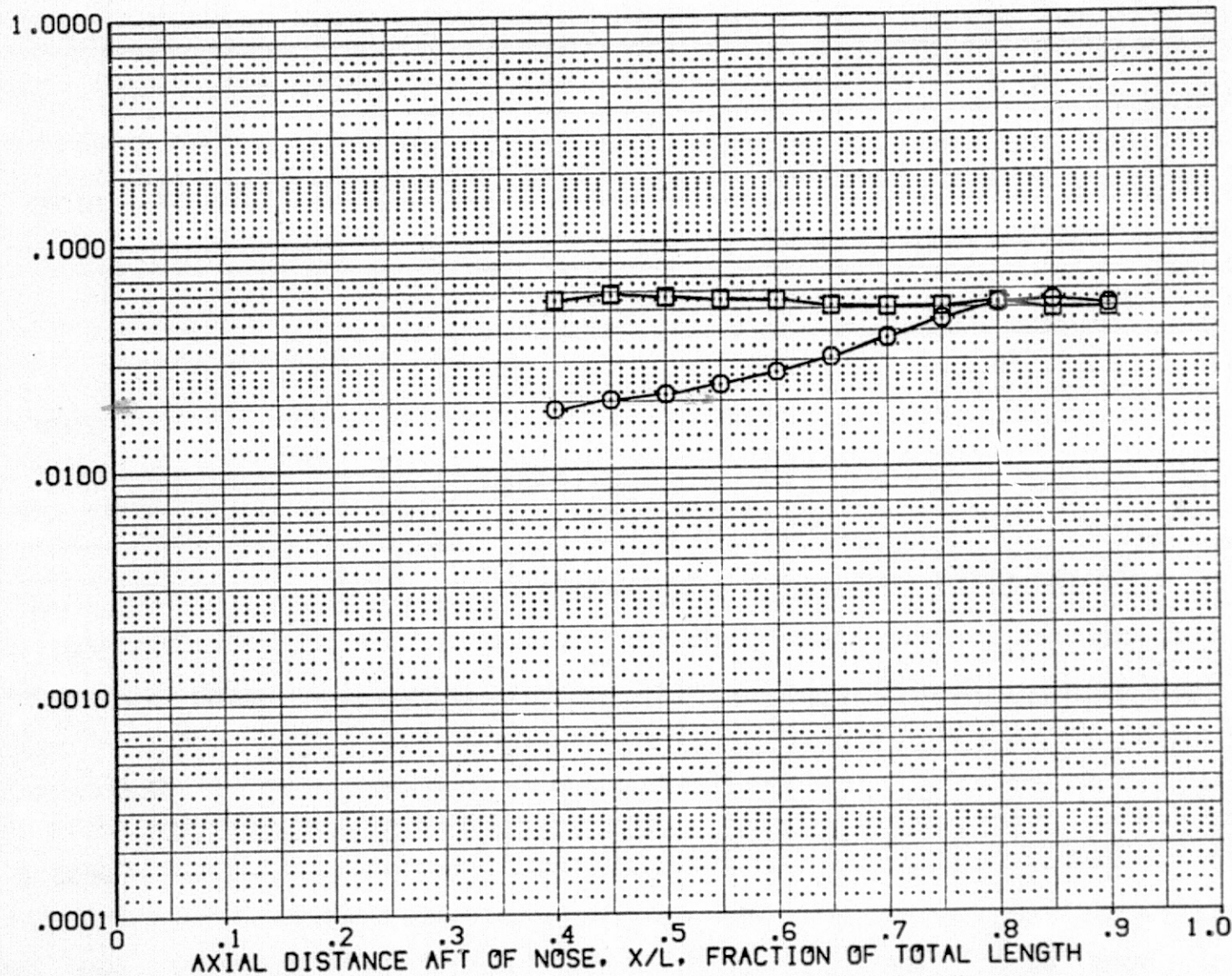
RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.  $H/H_{REF}$ 

FIG. 43 ET ALONE

RN VARIATION WITH GRIT

SYMBOL

RN/L

PHI

HAW/HT

PARAMETRIC VALUES

MACH

3.700

ALPHA

.000

BETA

.000

GRITNO

25.000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

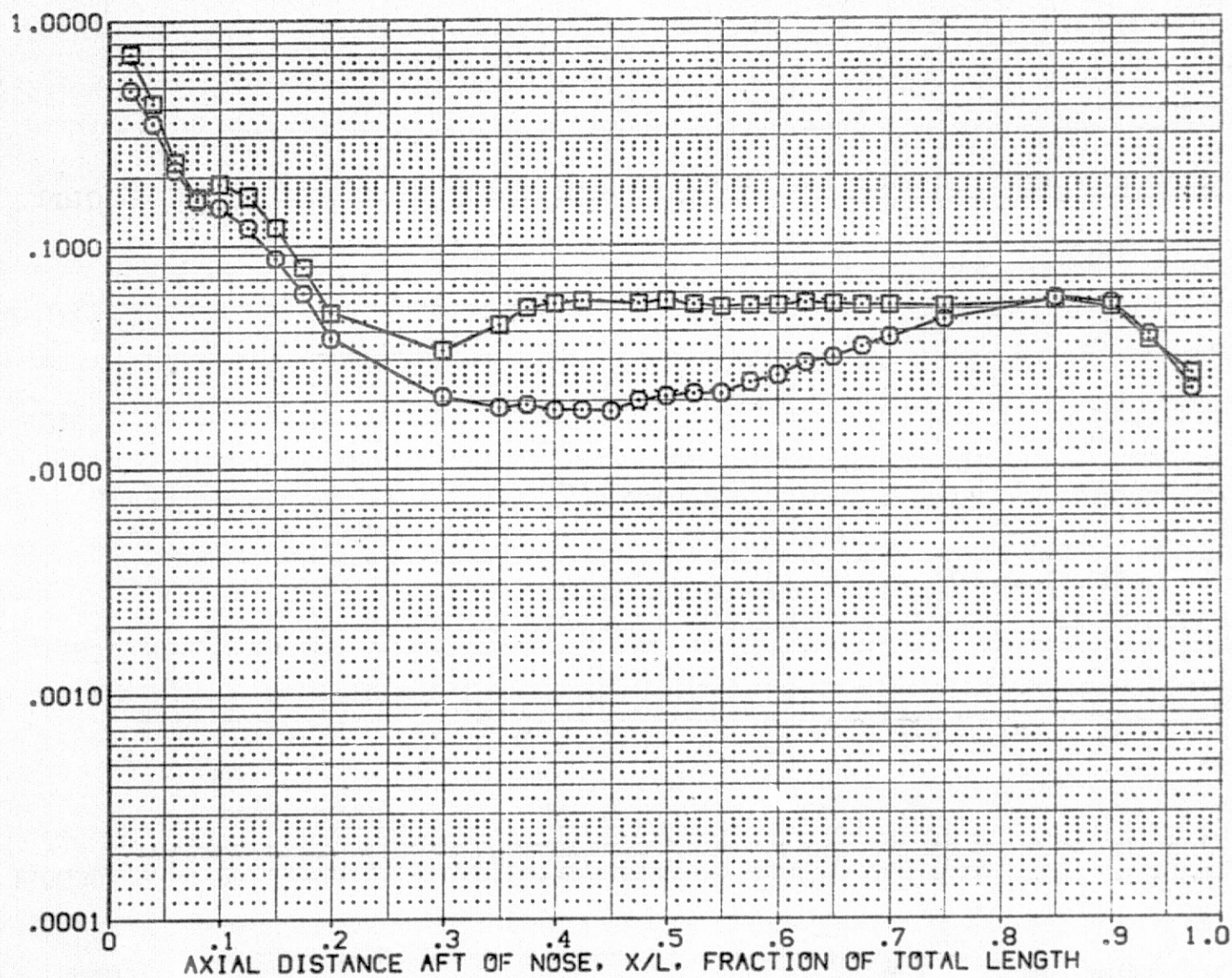


FIG. 43 ET ALONE

RN VARIATION WITH GRIT



# IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQSO1)

SYMBOL	PHI	HAW/HT	RN/L
○	90.000	.900	1.930
□	135.000		
◇	180.000		
△	225.000		

MACH	BETA	PARAMETRIC VALUES	ALPHA	DELTAH
3.700	.000		.000	.175

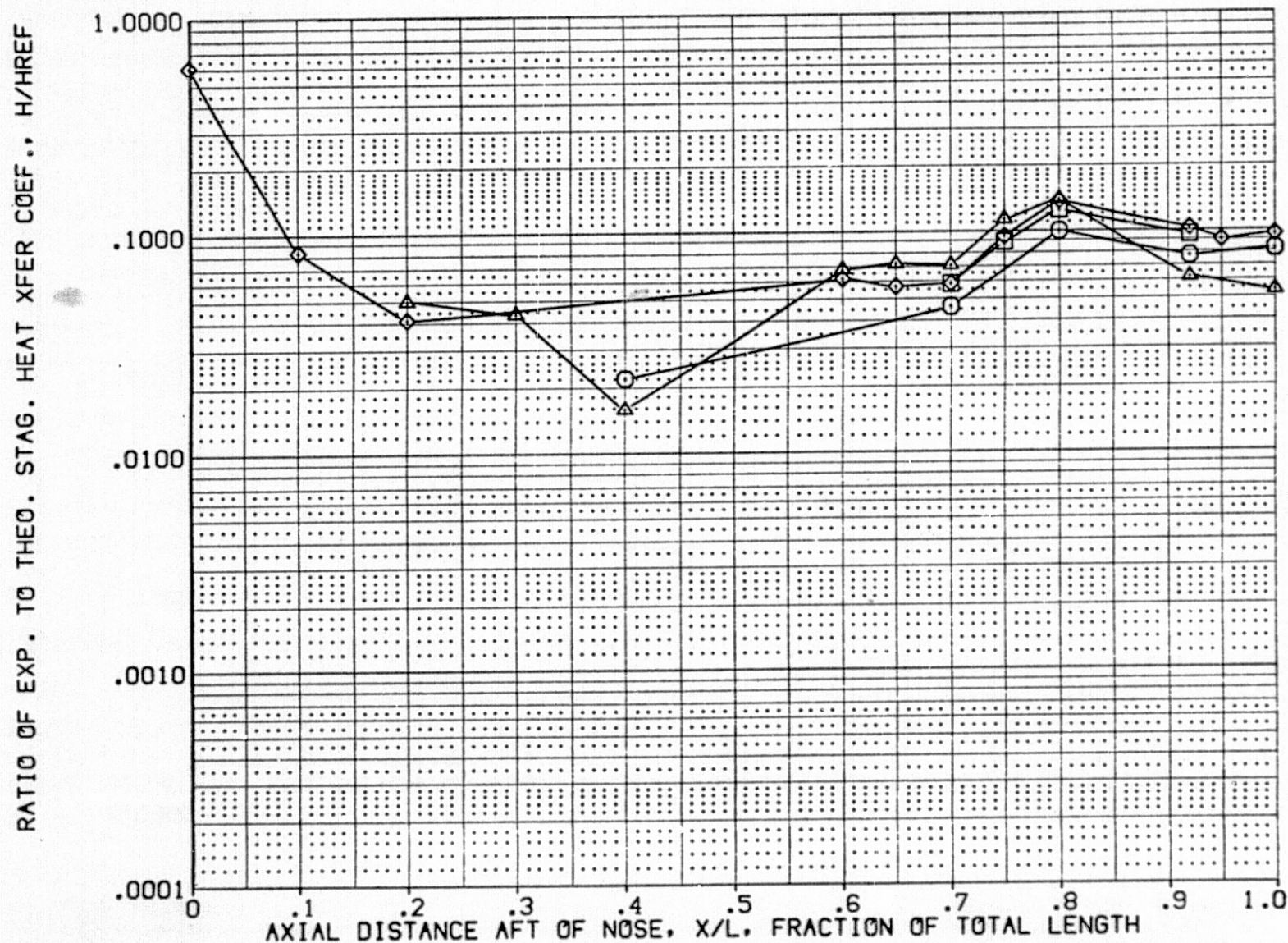


FIG. 44 INTEGRATED VEHICLE - SRB SURFACE PHI VARIATION RN = 2 MILLION / FT.

# IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQS01)

SYMBOL	PHI	HAV/HT	RN/L
○	270.000	.900	1.930
□	315.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

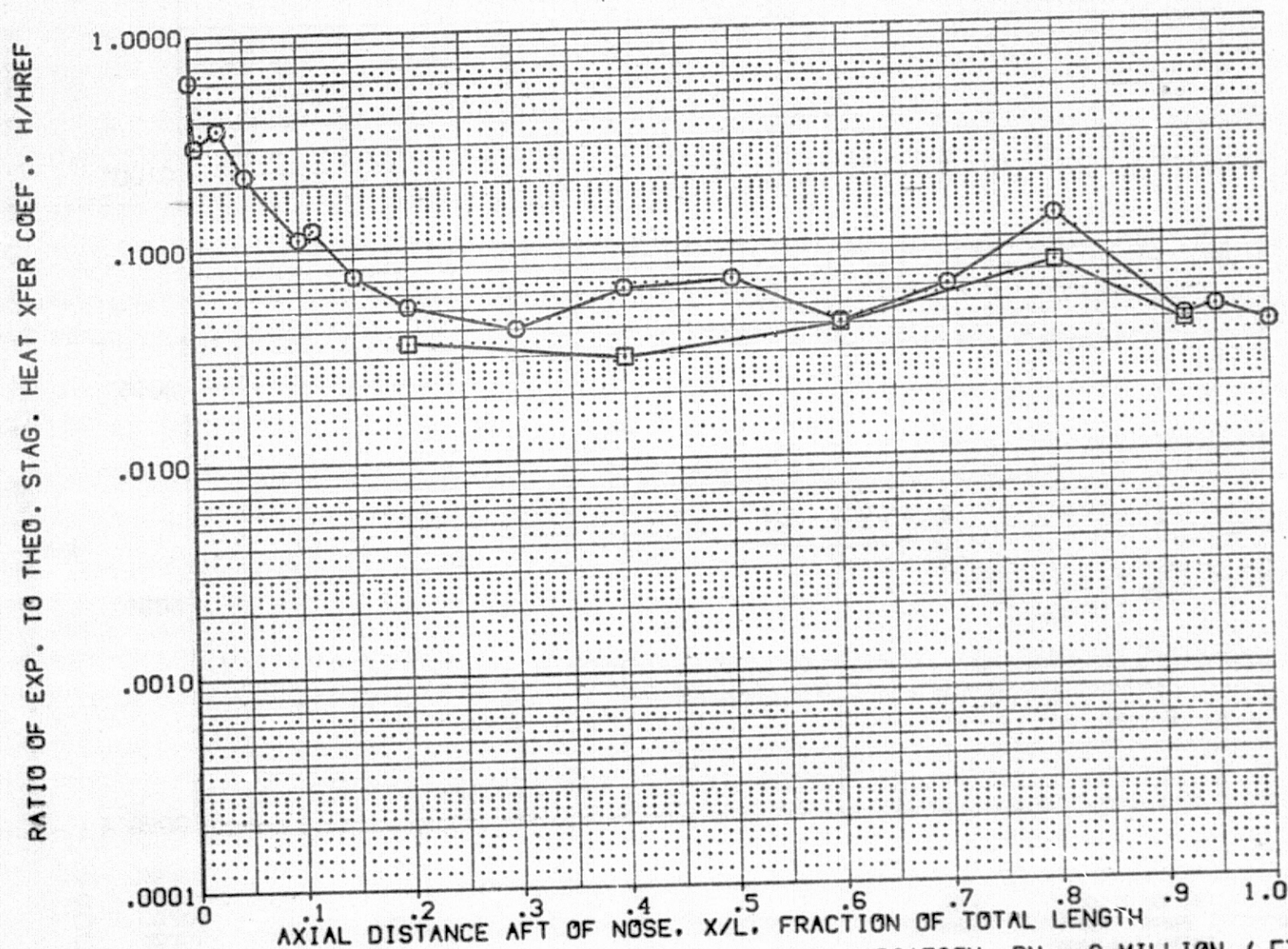


FIG. 44 INTEGRATED VEHICLE - SRB SURFACE PHI VARIATION RN = 2 MILLION / FT.



# IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQSO2)

SYMBOL	PHI	HAV/HT	RN/L
○	90.000	.900	1.990
□	135.000		
◇	180.000		
△	225.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	-5.000
BETA	.000	DELTAH	.175

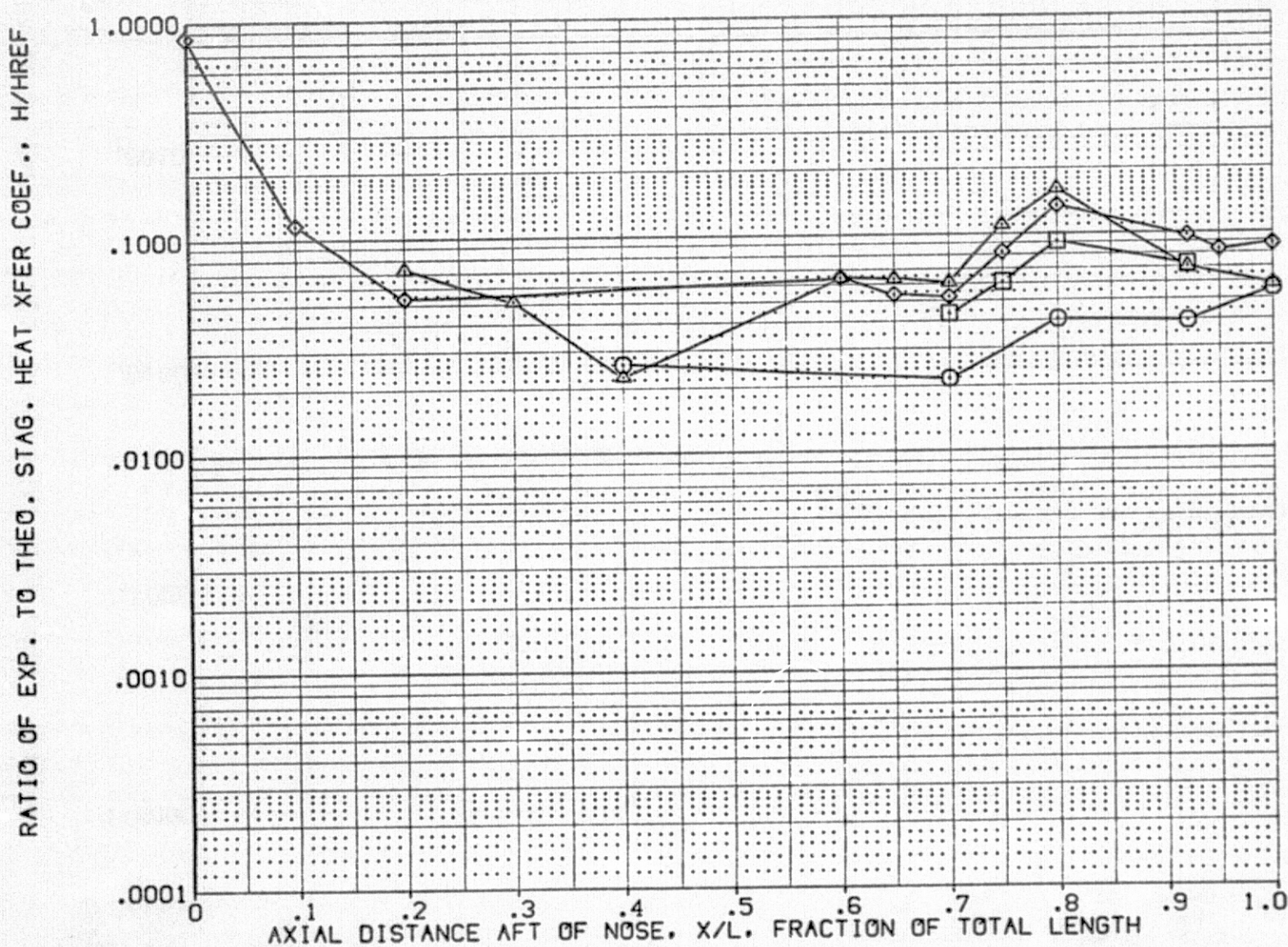


FIG. 44 INTEGRATED VEHICLE - SRB SURFACE PHI VARIATION RN = 2 MILLION / FT.

# IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQS02)

SYMBOL	PHI	HAW/HT	RN/L
○	270.000	.900	1.990
□	315.000		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
ALPHA	-5.000
DELTAH	.175

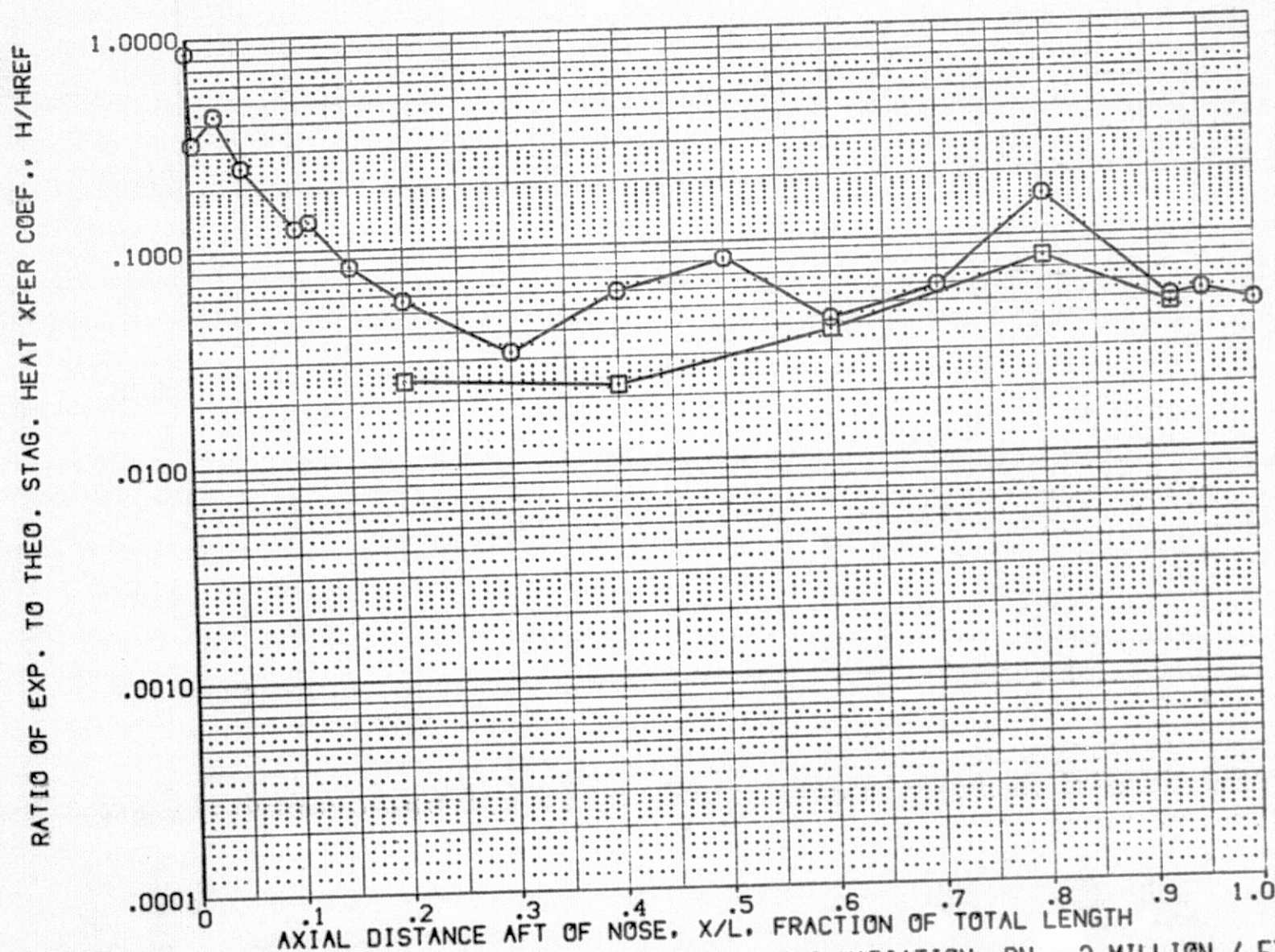


FIG. 44 INTEGRATED VEHICLE - SRB SURFACE PHI VARIATION RN = 2 MILLION / FT.



# IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQS13)

SYMBOL	PHI	HAV/HT	RN/L
○	90.000	.900	1.990
□	135.000		
◇	180.000		
△	225.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.069

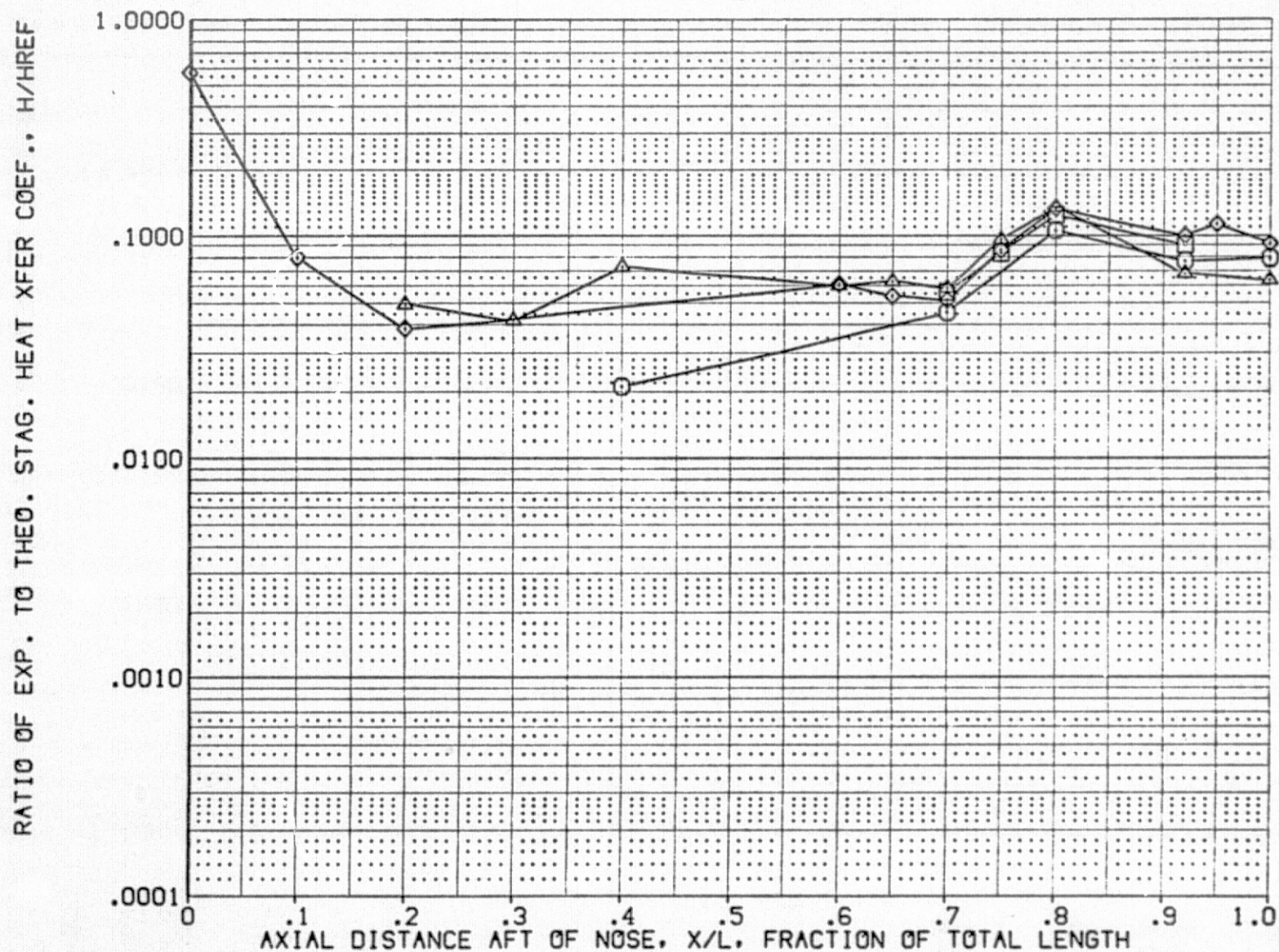


FIG. 44 INTEGRATED VEHICLE - SRB SURFACE PHI VARIATION  $RN = 2 \text{ MILLION / FT.}$

# IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQS13)

SYMBOL	PHI	HAW/HT	RN/L
○	270.000	.900	1.990
□	315.000		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
ALPHA	.000
DELTAH	.069

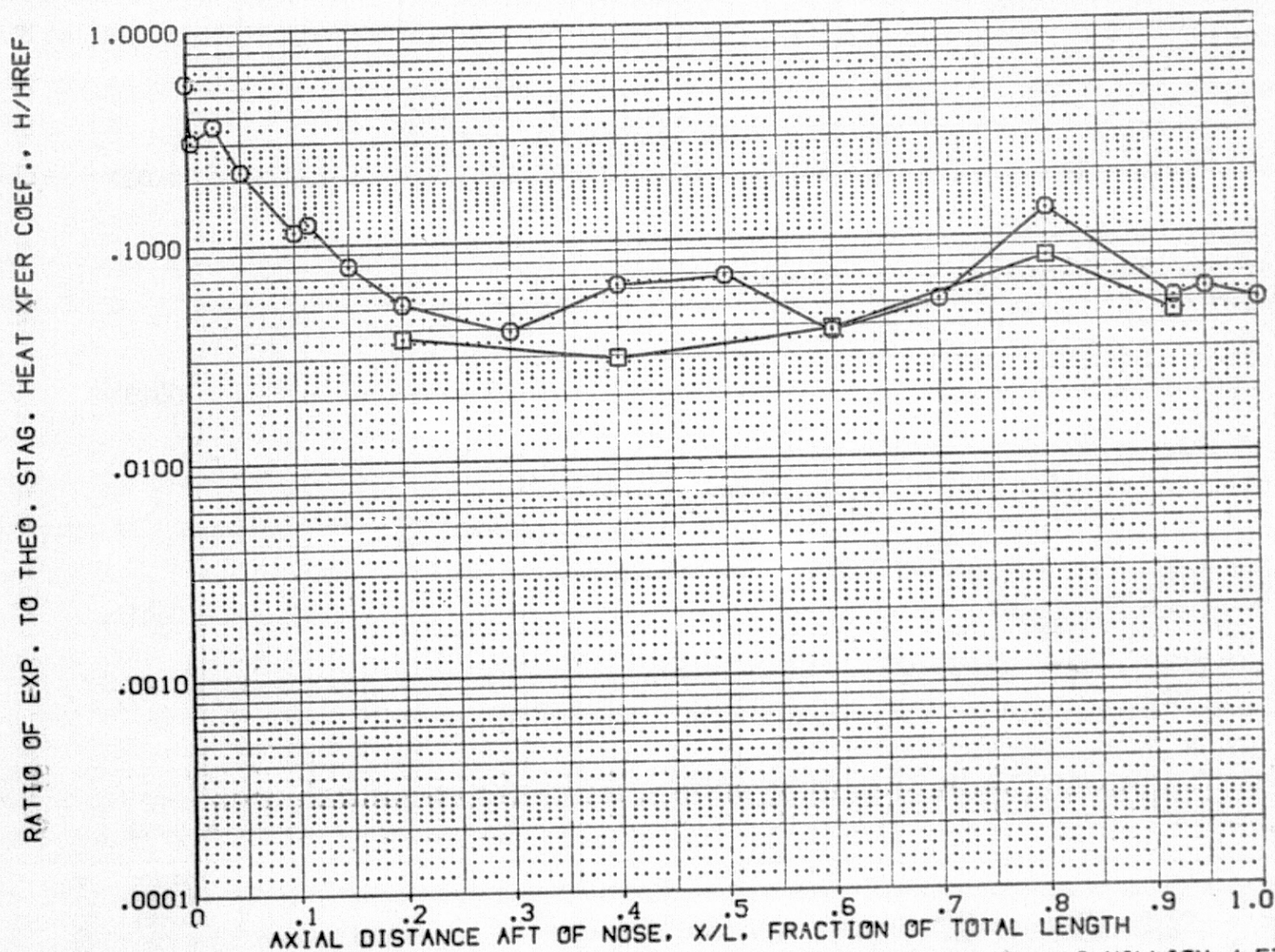


FIG. 44 INTEGRATED VEHICLE - SRB SURFACE PHI VARIATION  $RN = 2$  MILLION / FT.



# IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQS14)

SYMBOL	PHI	HAW/HT	RN/L	MACH	BETA	PARAMETRIC VALUES	ALPHA	-5.000
○	90.000	.900	2.000			3.700		
□	135.000					.000	DELTAH	.069
◇	180.000							
△	225.000							

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

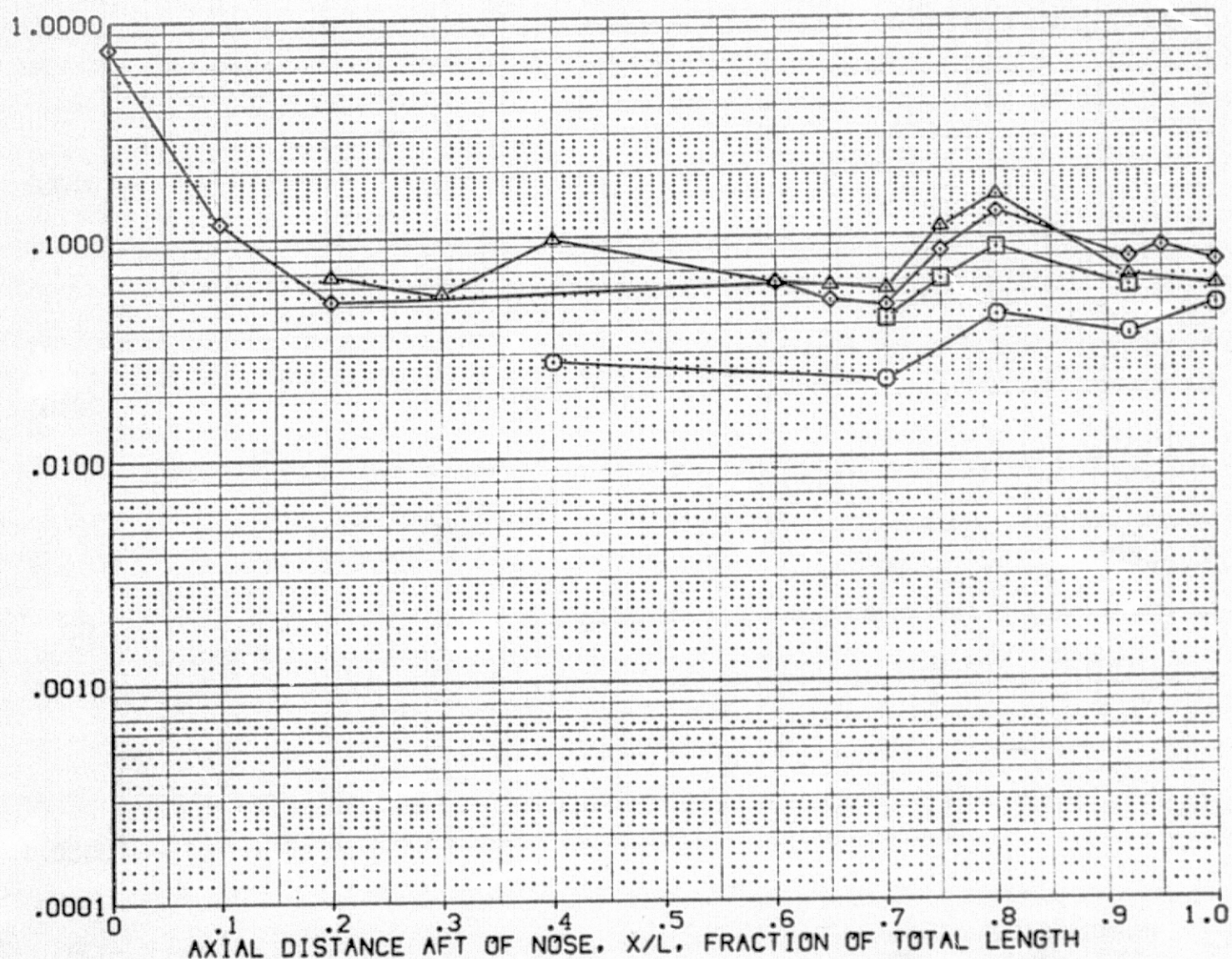


FIG. 44 INTEGRATED VEHICLE - SRB SURFACE PHI VARIATION RN = 2 MILLION / FT.

SYMBOL	PHI	HAW/HT	RN/L
○	270.000	.900	2.000
□	315.000		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
ALPHA	-5.000
DELTAH	.069

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

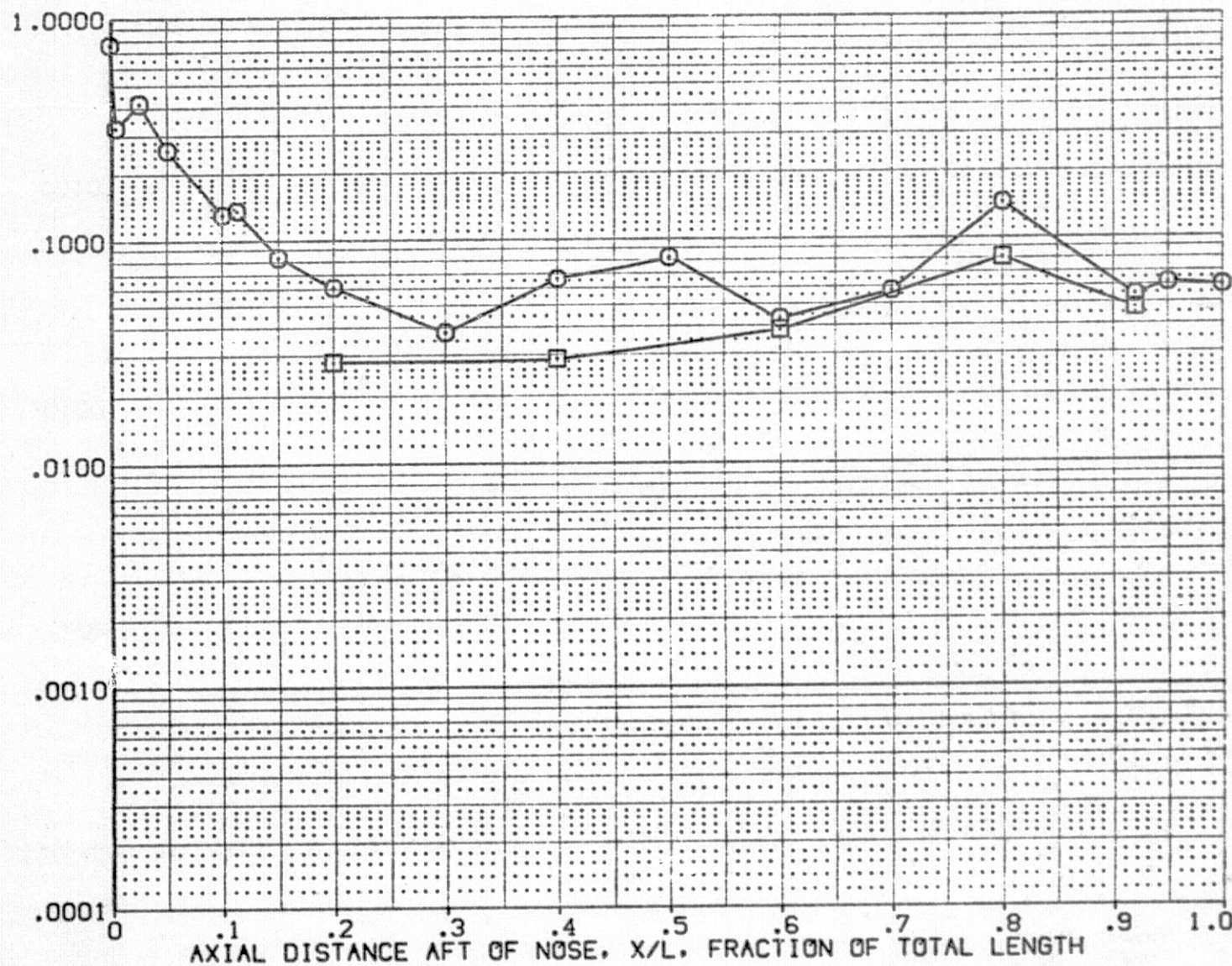


FIG. 44 INTEGRATED VEHICLE - SRB SURFACE PHI VARIATION RN = 2 MILLION / FT.



IH16 089B+T8+S6+GRIT SRB

(CPQS15)

SYMBOL	PHI	HAW/HT	RN/L
○	90.000	.900	1.890
□	135.000		
◇	180.000		
△	225.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175
GRITNO	25.000		

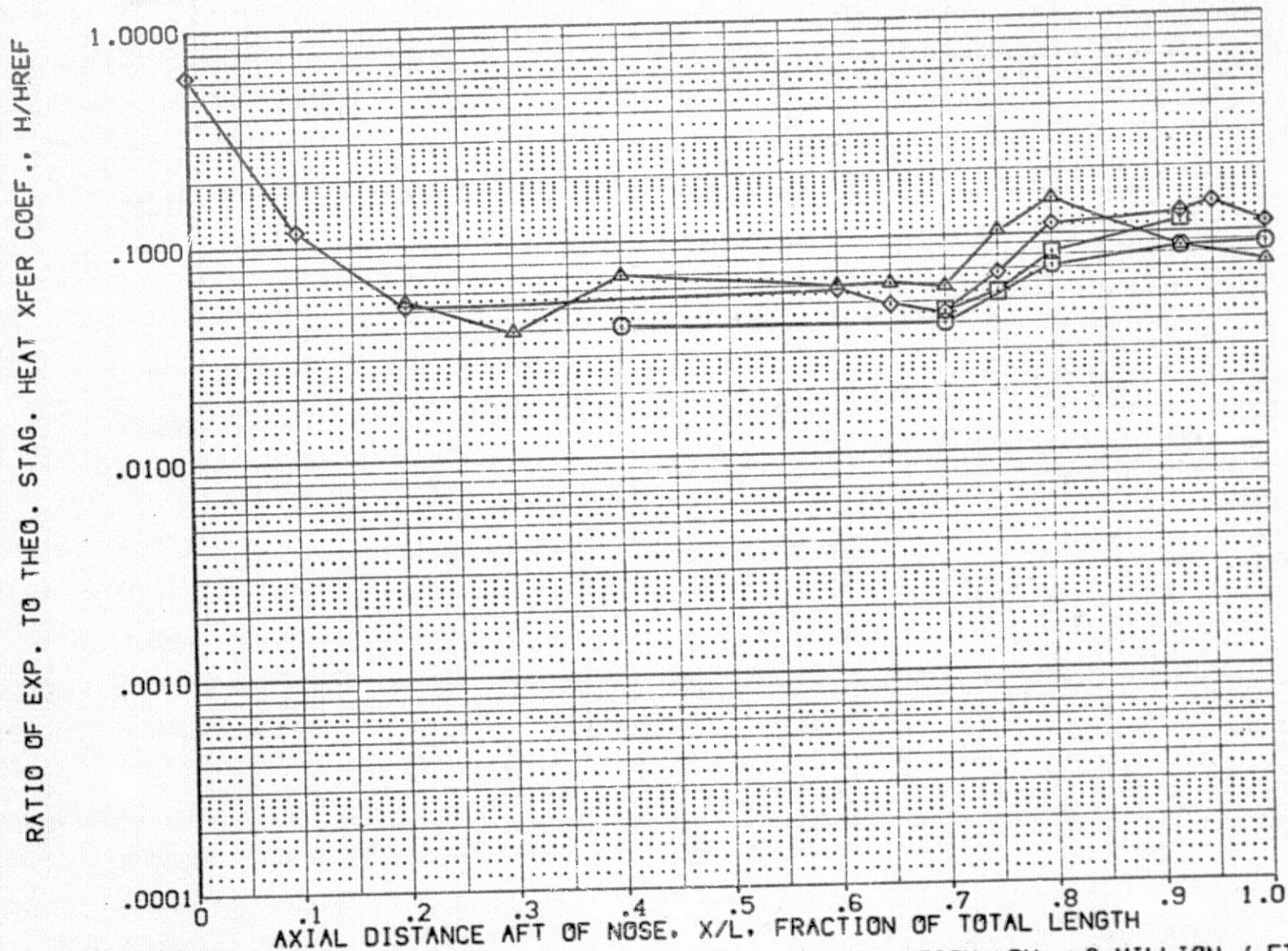
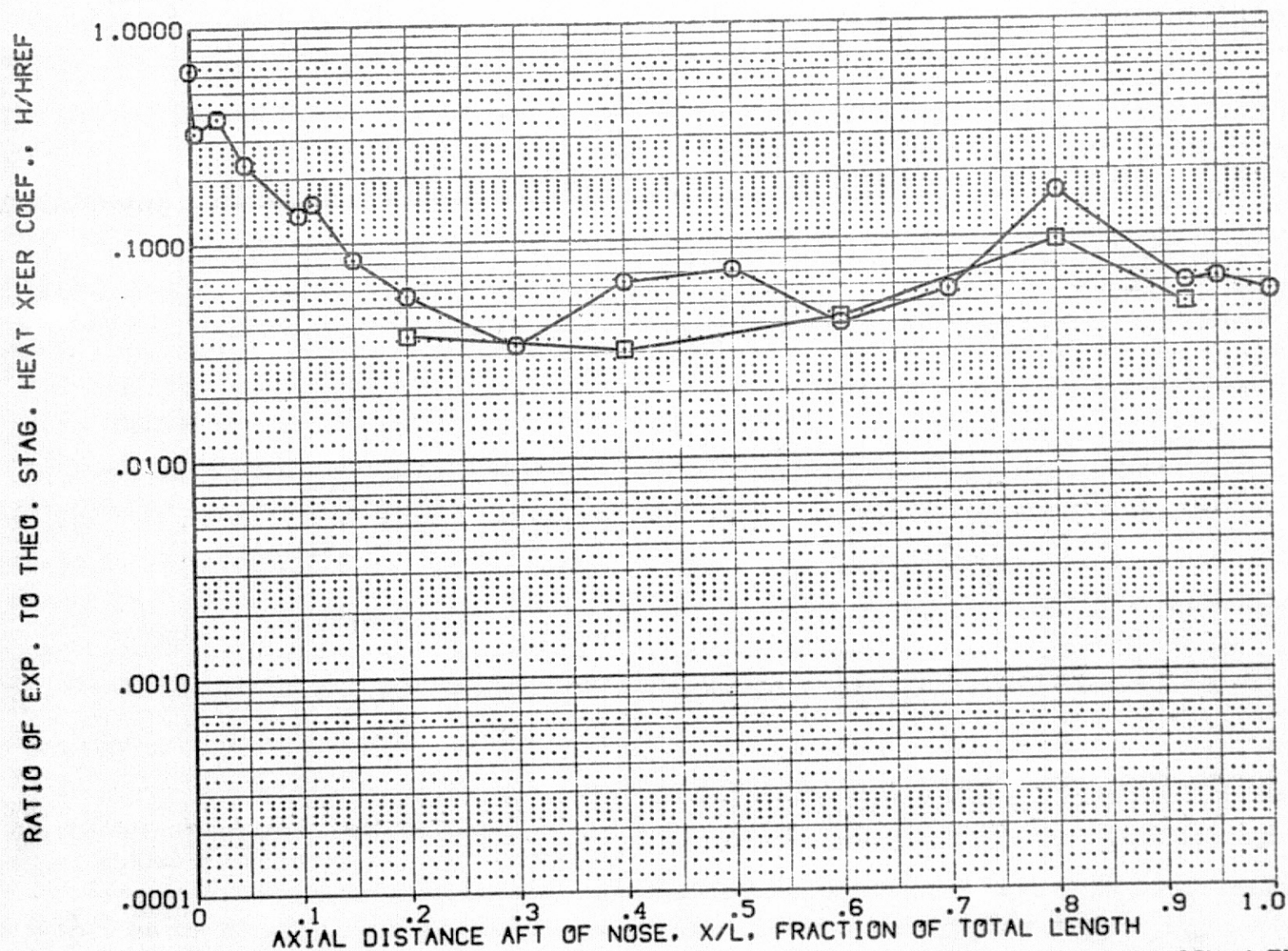


FIG. 44 INTEGRATED VEHICLE - SRB SURFACE PHI VARIATION RN = 2 MILLION / FT.

SYMBOL	PHI	HAV/HT	RN/L
○	270.000	.900	1.890
□	315.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175
GRITN0	25.000		

FIG. 44 INTEGRATED VEHICLE - SRB SURFACE PHI VARIATION  $RN = 2$  MILLION / FT.



# IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQS01)

SYMBOL	PHI	HAW/HT	RN/L	MACH	BETA	PARAMETRIC VALUES	ALPHA	DELTAH
○	90.000	.900	4.570	3.700	.000		.000	
□	135.000			.000			.175	
◇	180.000							
△	225.000							

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

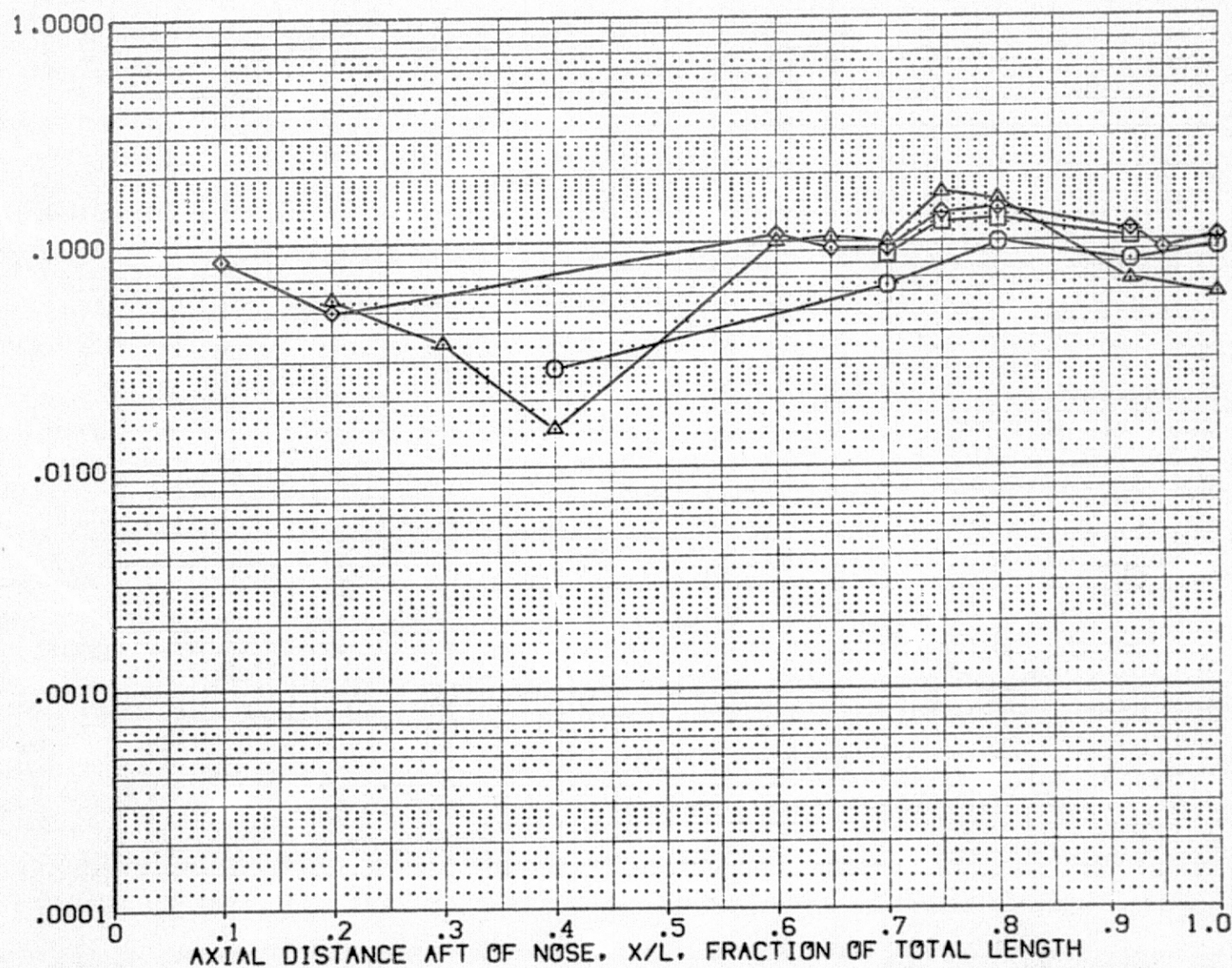


FIG. 45 INTEGRATED VEHICLE - SRB SURFACE PHI VARIATION RN = 5 MILLION / FT.

# IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQS01)

SYMBOL	PHI	HAW/HT	RN/L
○	270.000	.900	4.570
□	315.000		

MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF. H/HREF

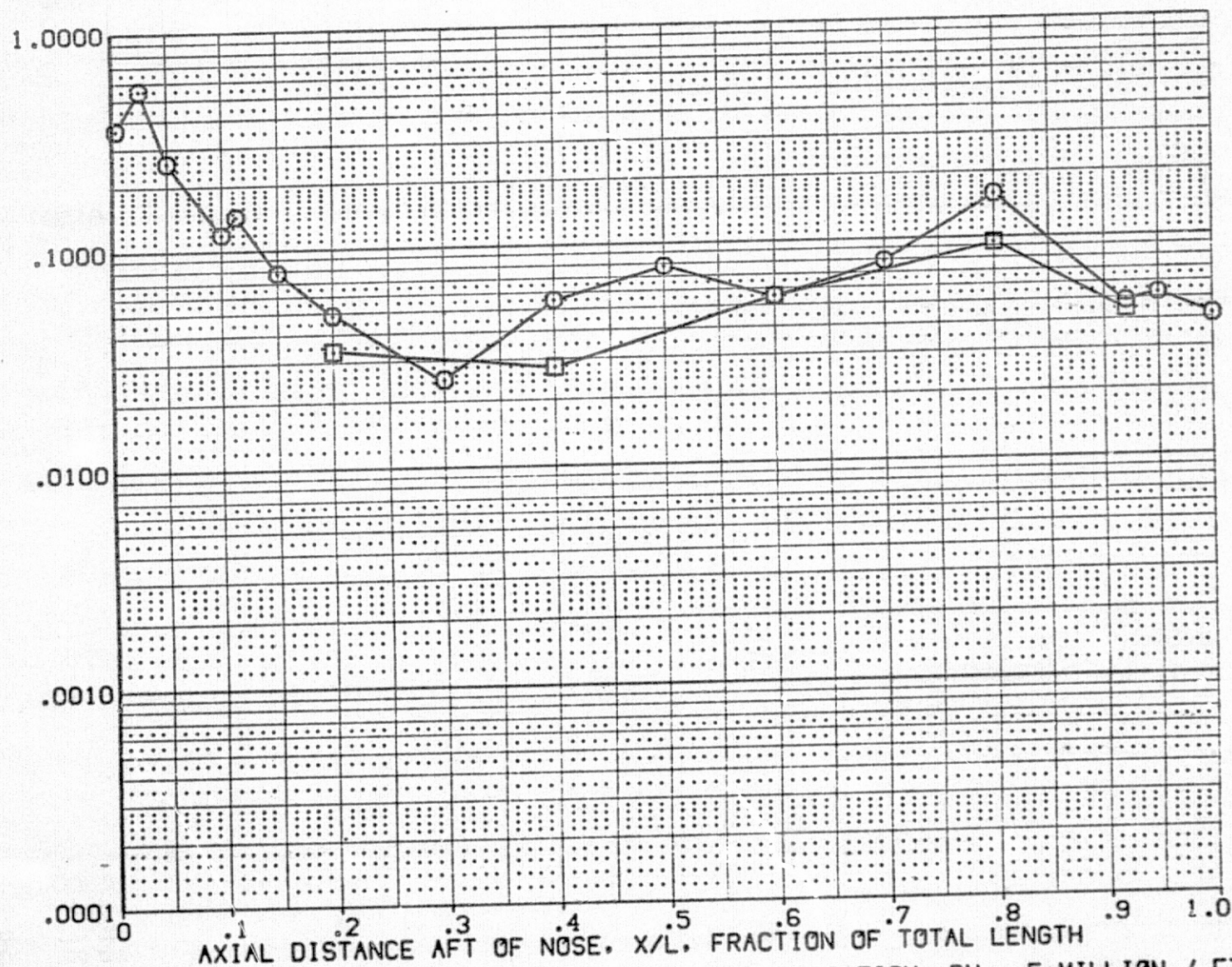


FIG. 45 INTEGRATED VEHICLE - SRB SURFACE PHI VARIATION RN = 5 MILLION / FT.



# IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQS02)

SYMBOL	PHI	HAW/HT	RN/L	PARAMETRIC VALUES			
				MACH	BETA	ALPHA	DELTA
○	90.000	.900	4.560	3.700	.000	-5.000	.175
□	135.000						
◇	180.000						
△	225.000						

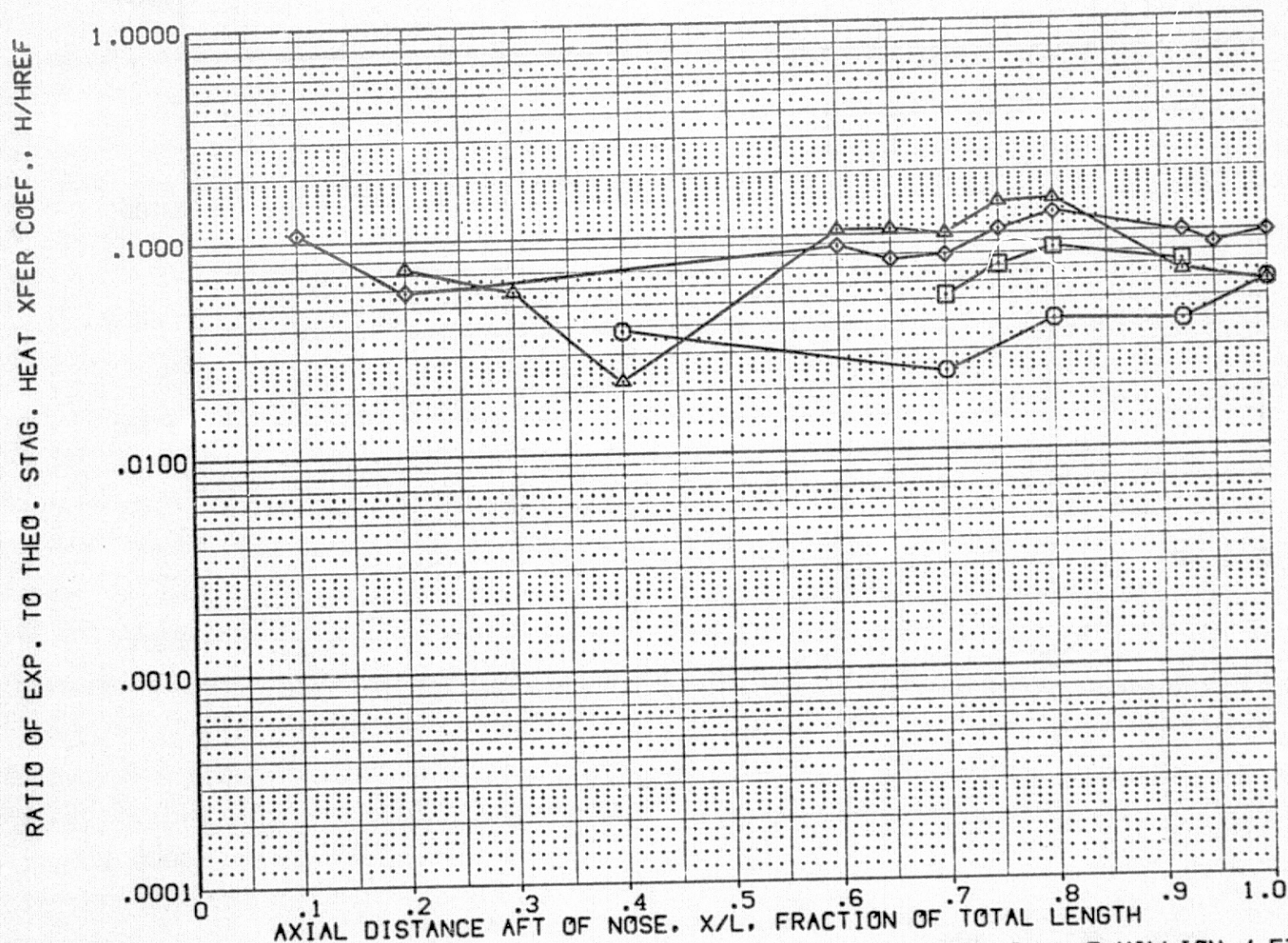


FIG. 45 INTEGRATED VEHICLE - SRB SURFACE PHI VARIATION RN = 5 MILLION / FT.

IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQS02)

SYMBOL	PHI	HAW/HT	RN/L
○	270.000	.900	4.560
□	315.000		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
ALPHA	-5.000
DELTAH	.175

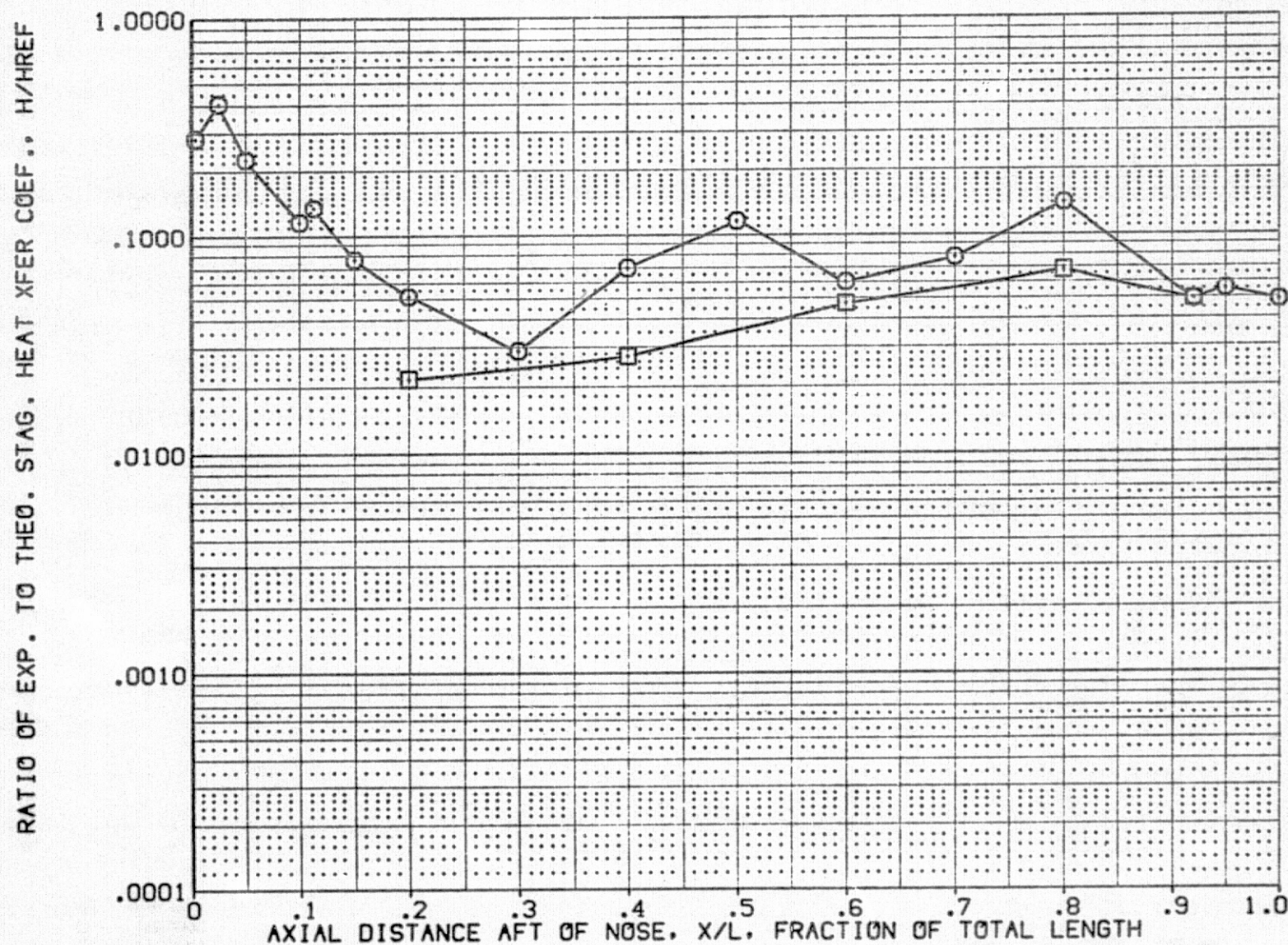


FIG. 45 INTEGRATED VEHICLE - SRB SURFACE PHI VARIATION RN = 5 MILLION / FT.



# IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQS13)

SYMBOL	PHI	HAW/HT	RN/L
○	90.000	.900	4.550
□	135.000		
◇	180.000		
△	225.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.069

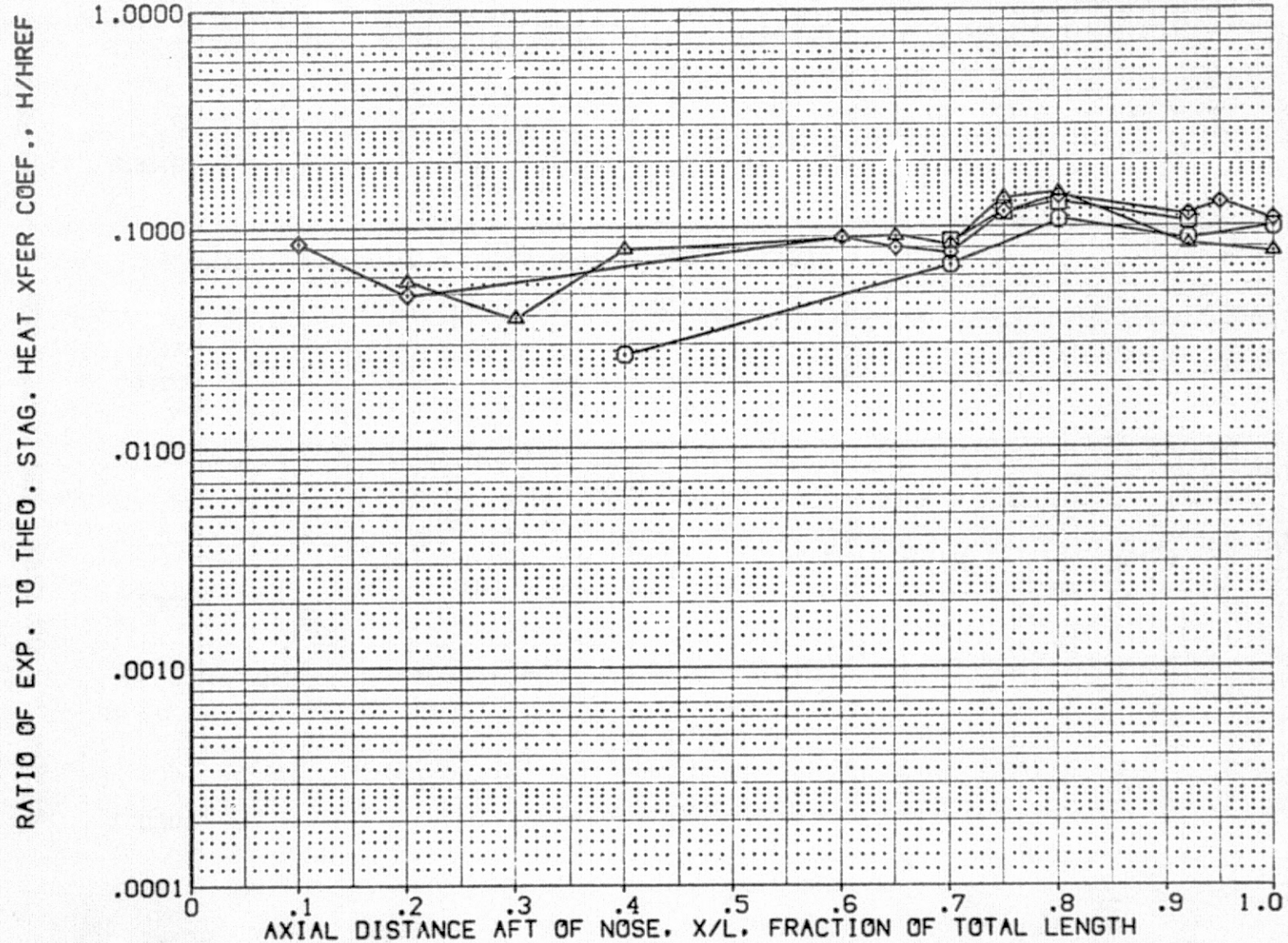


FIG. 45 INTEGRATED VEHICLE - SRB SURFACE PHI VARIATION  $RN = 5$  MILLION / FT.

# IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQS13)

SYMBOL	PHI	HAV/HT	RN/L
○	270.000	.900	4.550
□	315.000		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
ALPHA	.069
DELTAH	.069

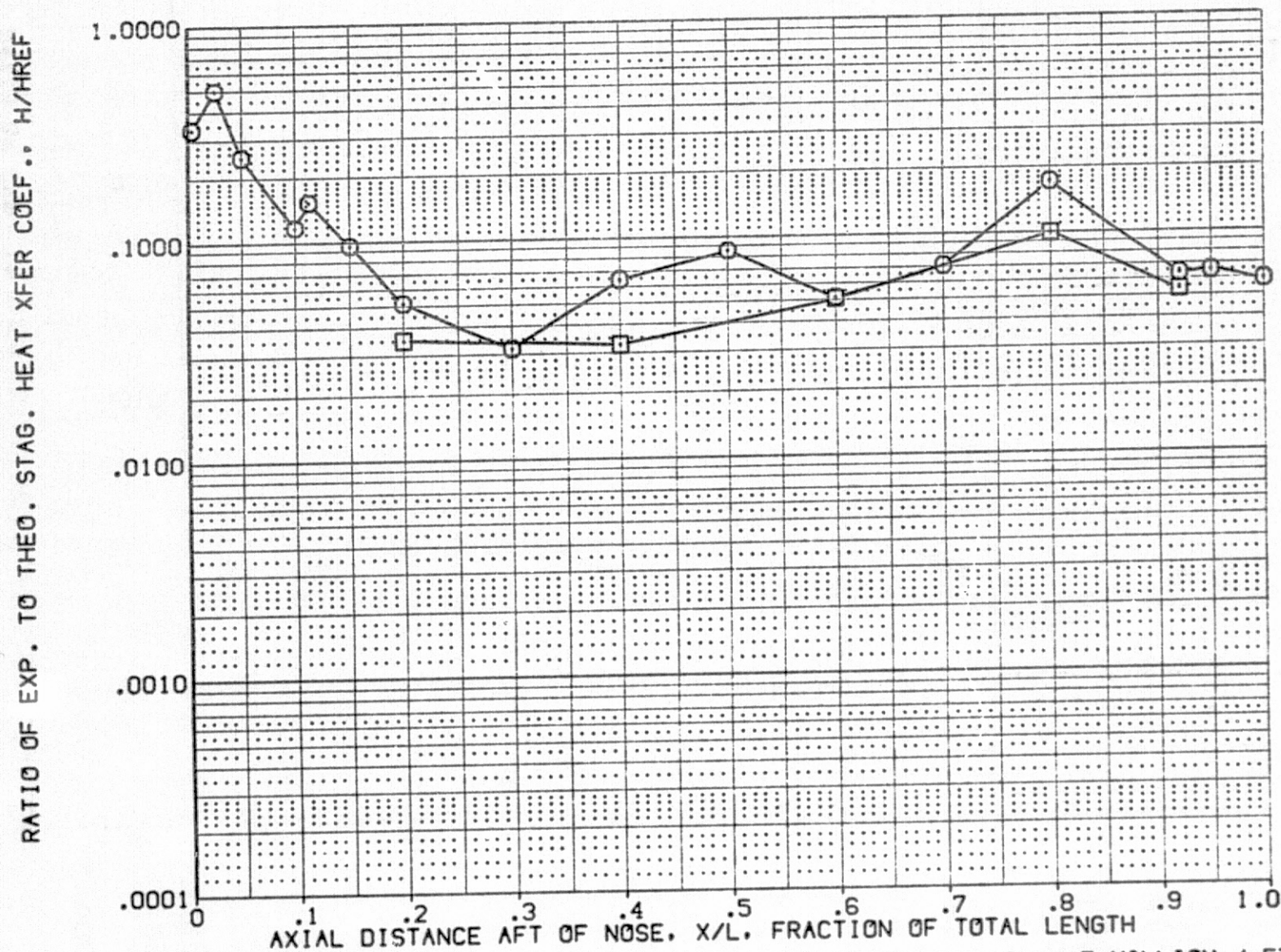


FIG. 45 INTEGRATED VEHICLE - SRB SURFACE PHI VARIATION  $RN = 5$  MILLION / FT.



# IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQS14)

SYMBOL	PHI	HAV/HT	RN/L
○	90.000	.900	4.470
□	135.000		
◇	180.000		
△	225.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	-5.000
SETA	.000	DELTAH	.069

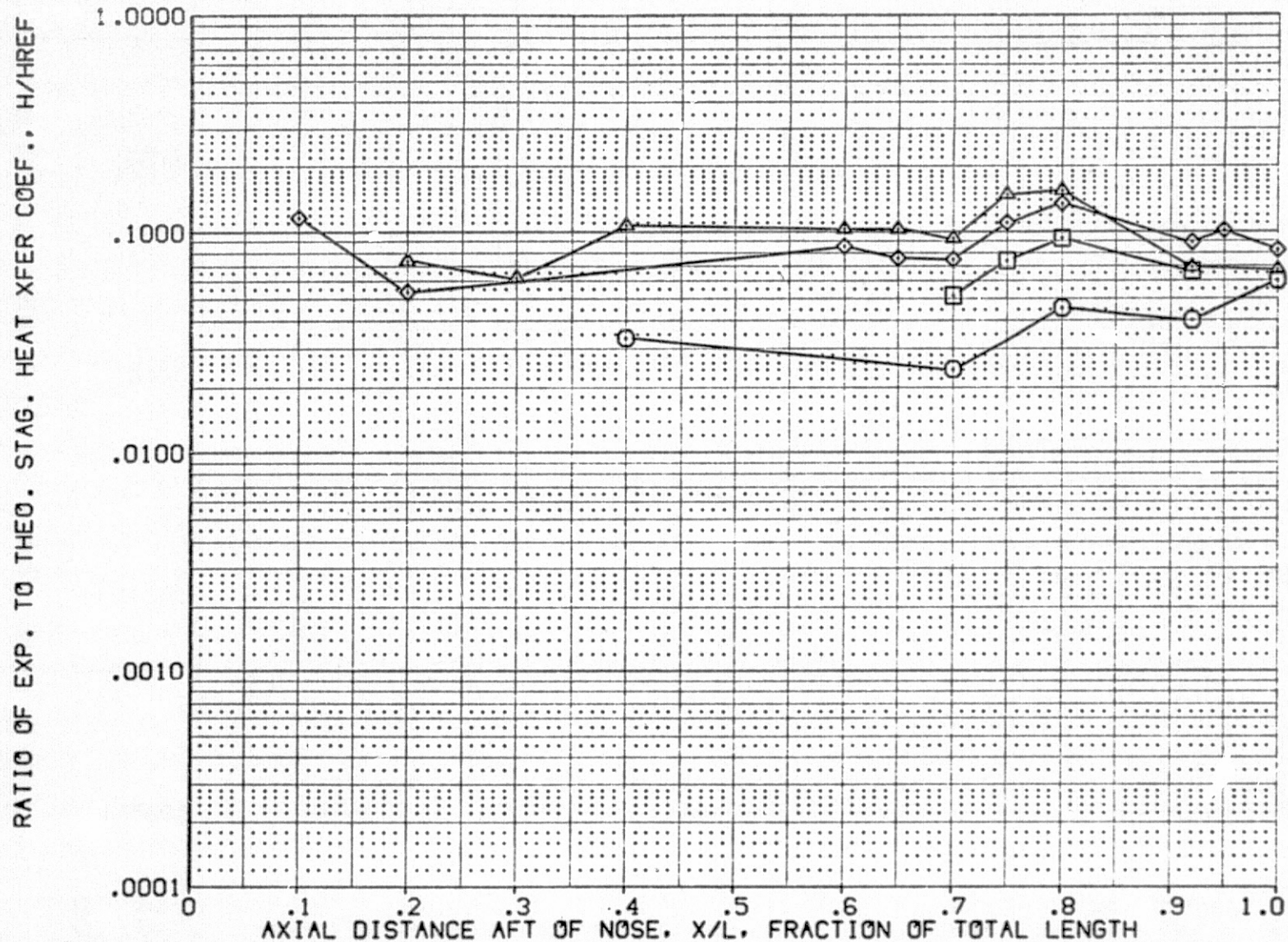


FIG. 45 INTEGRATED VEHICLE - SRB SURFACE PHI VARIATION  $RN = 5$  MILLION / FT.

# IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQS14)

SYMBOL	PHI	HAW/HT	RN/L
○	270.000	.900	4.470
□	315.000		

		PARAMETRIC VALUES		
MACH	3.700	ALPHA	-5.000	
BETA	.000	DELTAH	.069	

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF. H/HREF

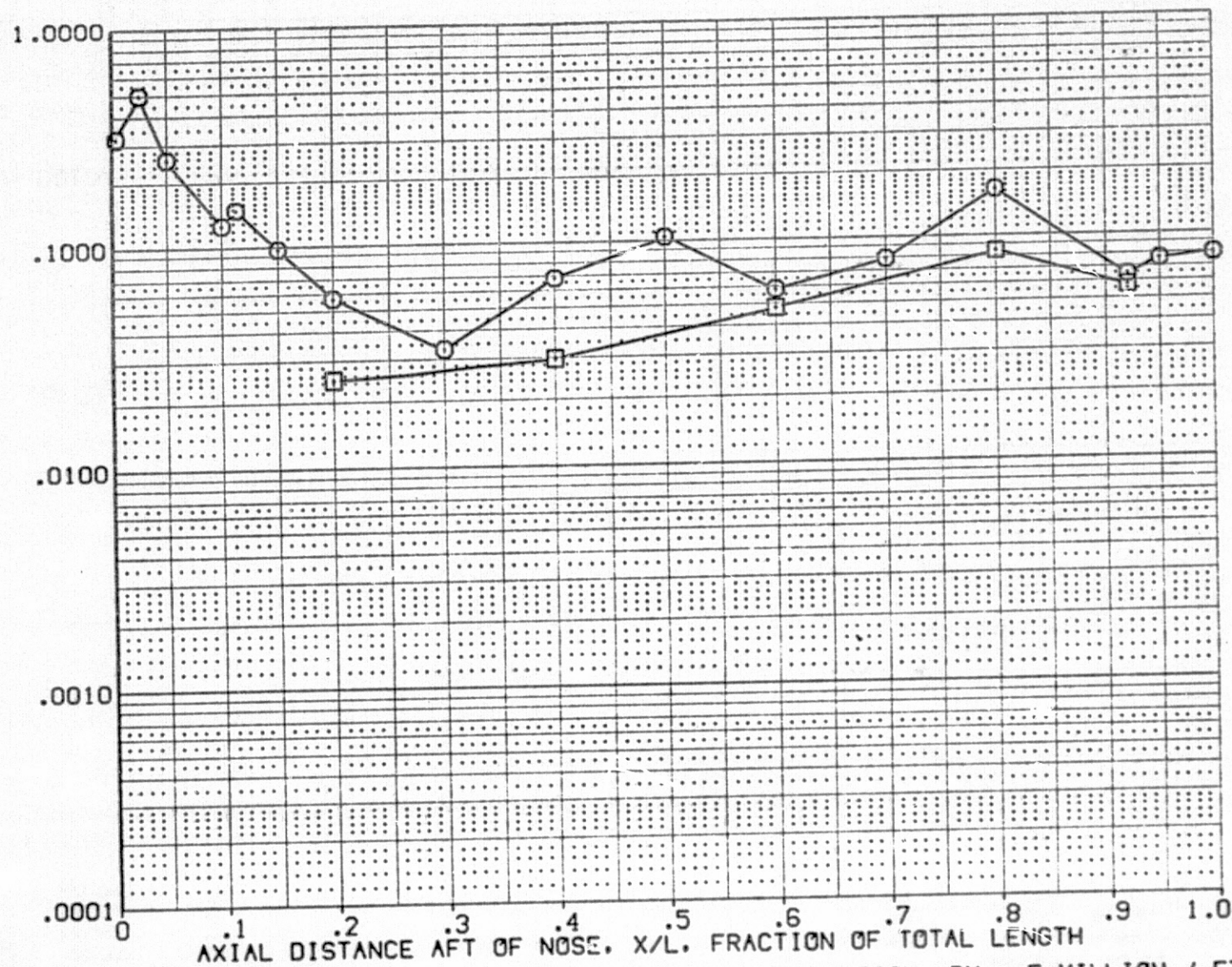


FIG. 45 INTEGRATED VEHICLE - SRB SURFACE PHI VARIATION RN = 5 MILLION / FT.



IH16 089B+T8+S6+GRIT SRB

(CPQS15)

SYMBOL	PHI	HAW/HT	RN/L
○	90.000	.900	4.620
□	135.000		
◇	180.000		
△	225.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175
GRITNO	25.000		

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

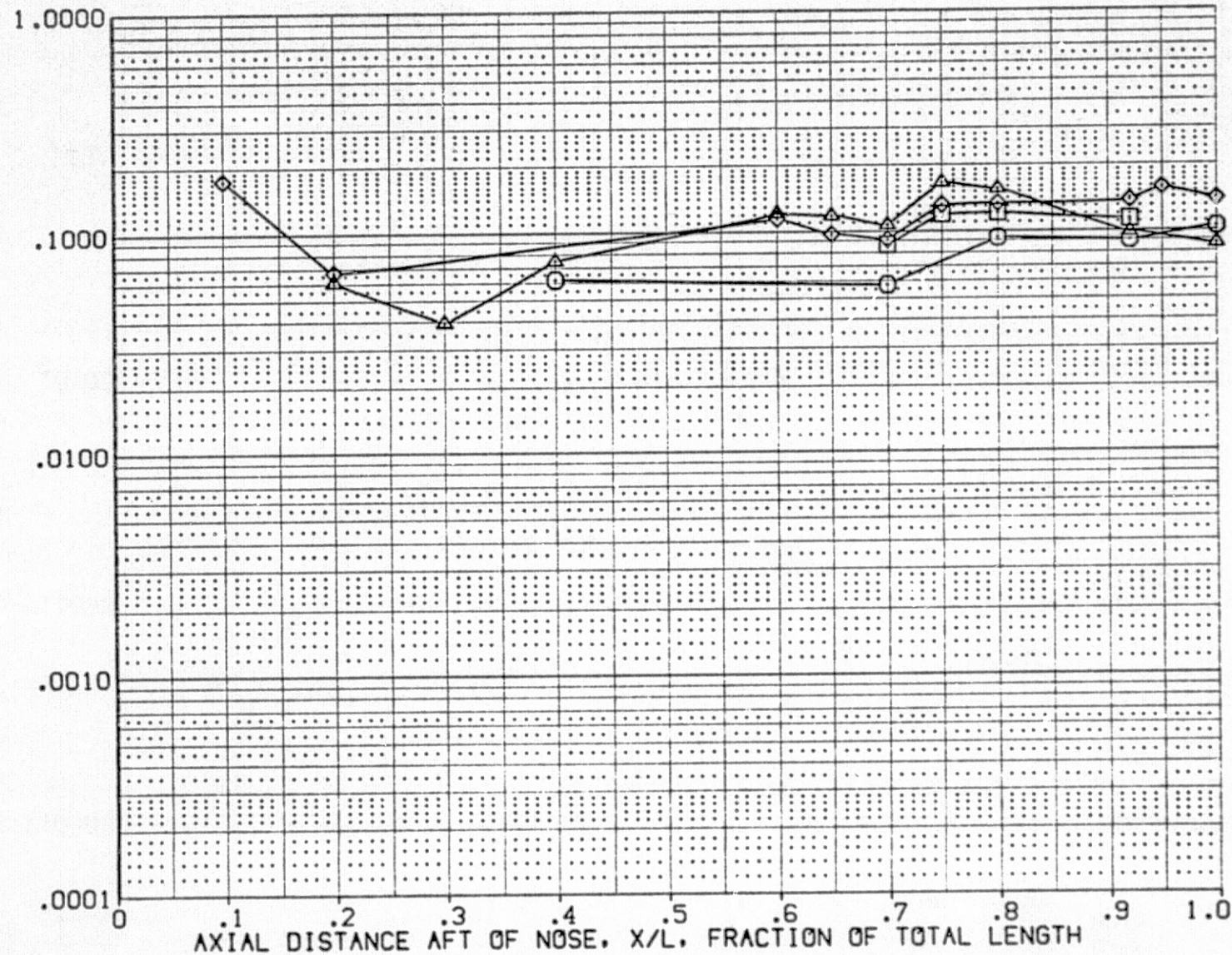


FIG. 45 INTEGRATED VEHICLE - SRB SURFACE PHI VARIATION RN = 5 MILLION / FT.

IH16 089B+T8+S6+GRIT SRB

(CPQS15)

SYMBOL	PHI	HAW/HT	RN/L
○	270.000	.900	4.620
□	315.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175
GRITN0	25.000		

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

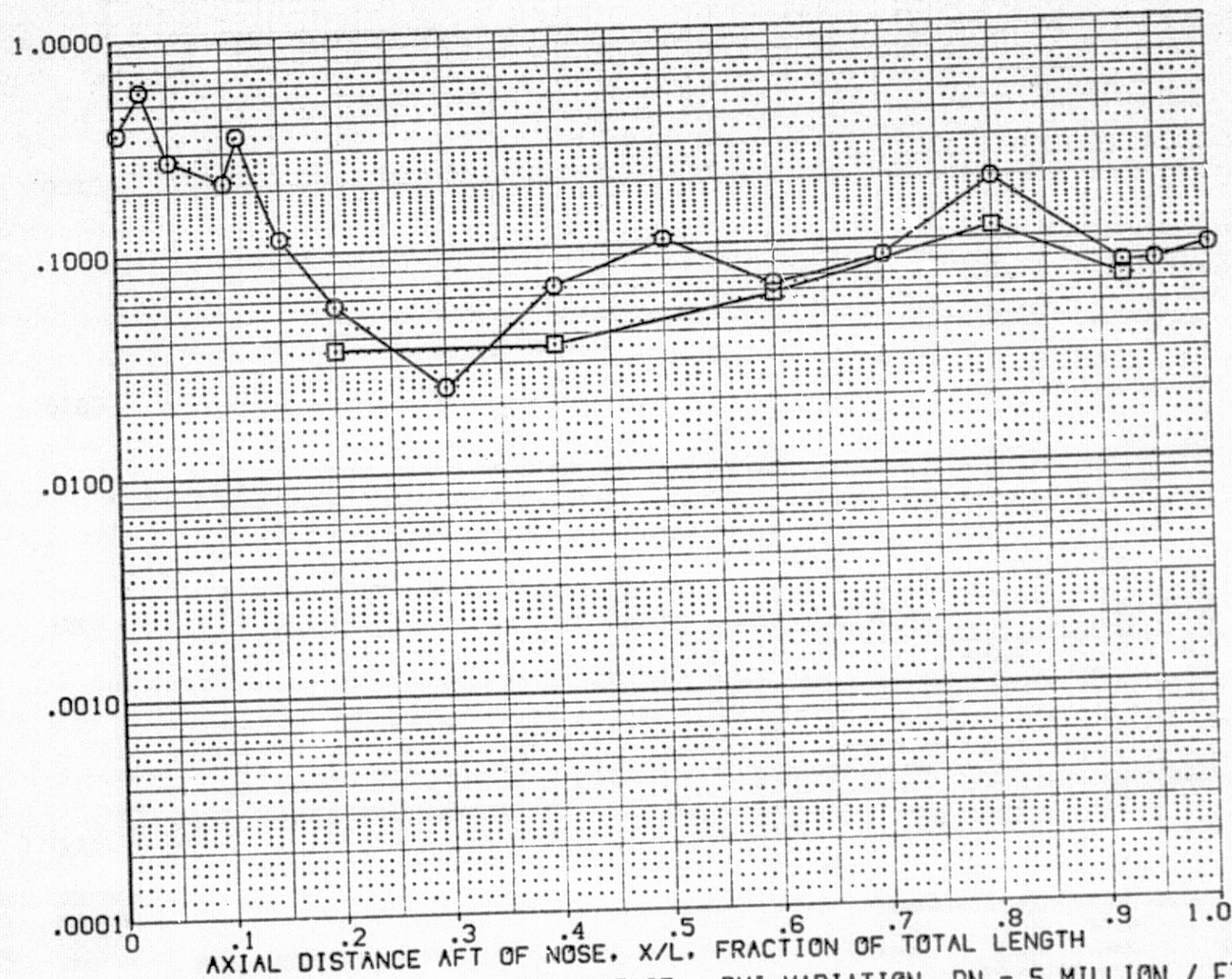


FIG. 45 INTEGRATED VEHICLE - SRB SURFACE PHI VARIATION RN = 5 MILLION / FT.



IH16 S6

## SOLID ROCKET BOOSTER SURFACE (CPQS05)

SYMBOL	PHI	HAW/HT	RN/L
○	90.000	.900	1.930
□	135.000		
◇	180.000		
△	225.000		

PARAMETRIC VALUES		
MACH	BETA	ALPHA
3.700	.000	.000

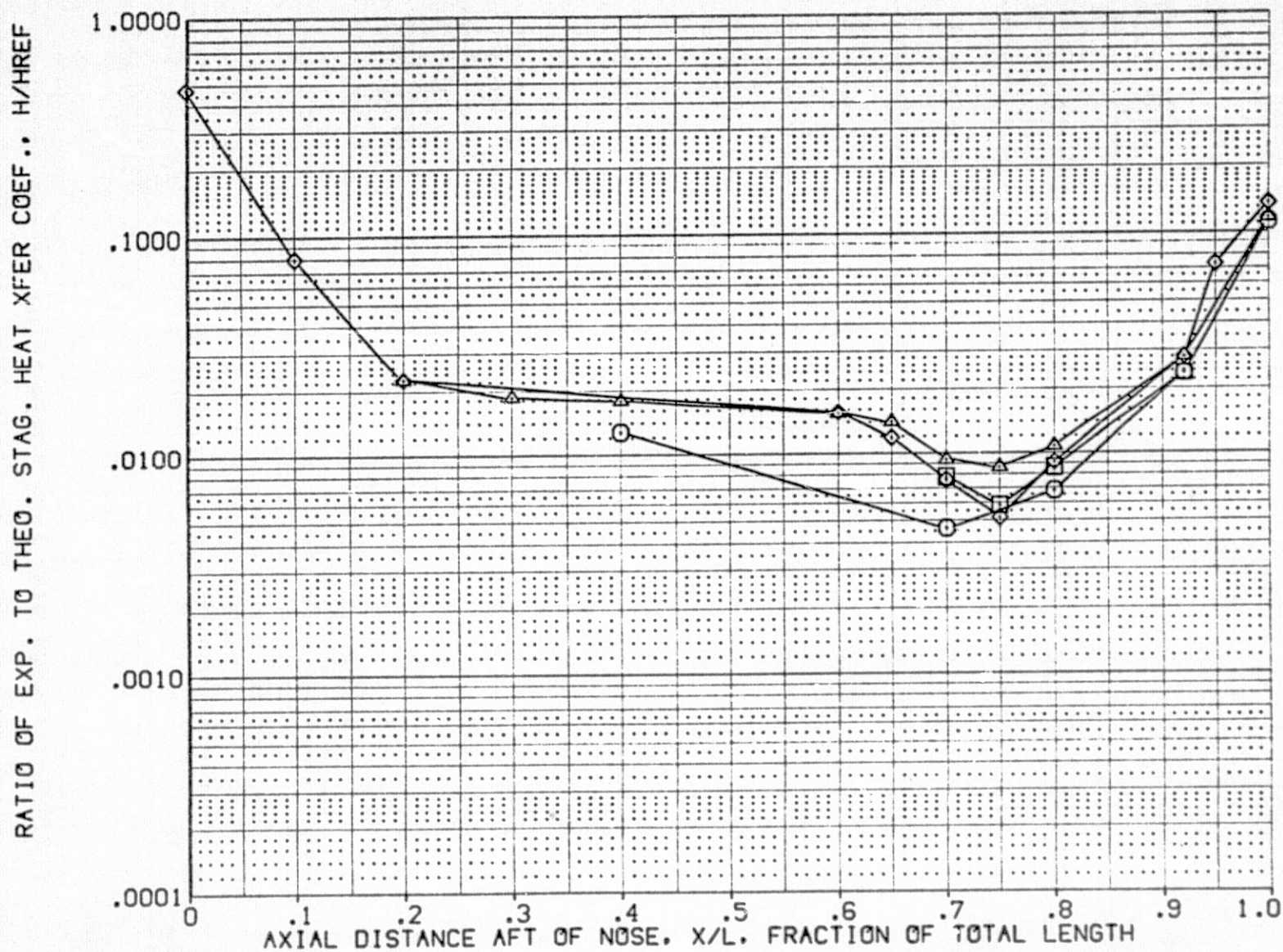


FIG. 46 SRB ALONE

PHI VARIATION RN = 2 MILLION / FT.

IH16 S6

## SOLID ROCKET BOOSTER SURFACE (CPQS05)

SYMBOL	PHI	HAW/HT	RN/L
○	270.000	.900	1.930
□	315.000		

MACH	PARAMETRIC VALUES	
BETA	3.700	ALPHA .000

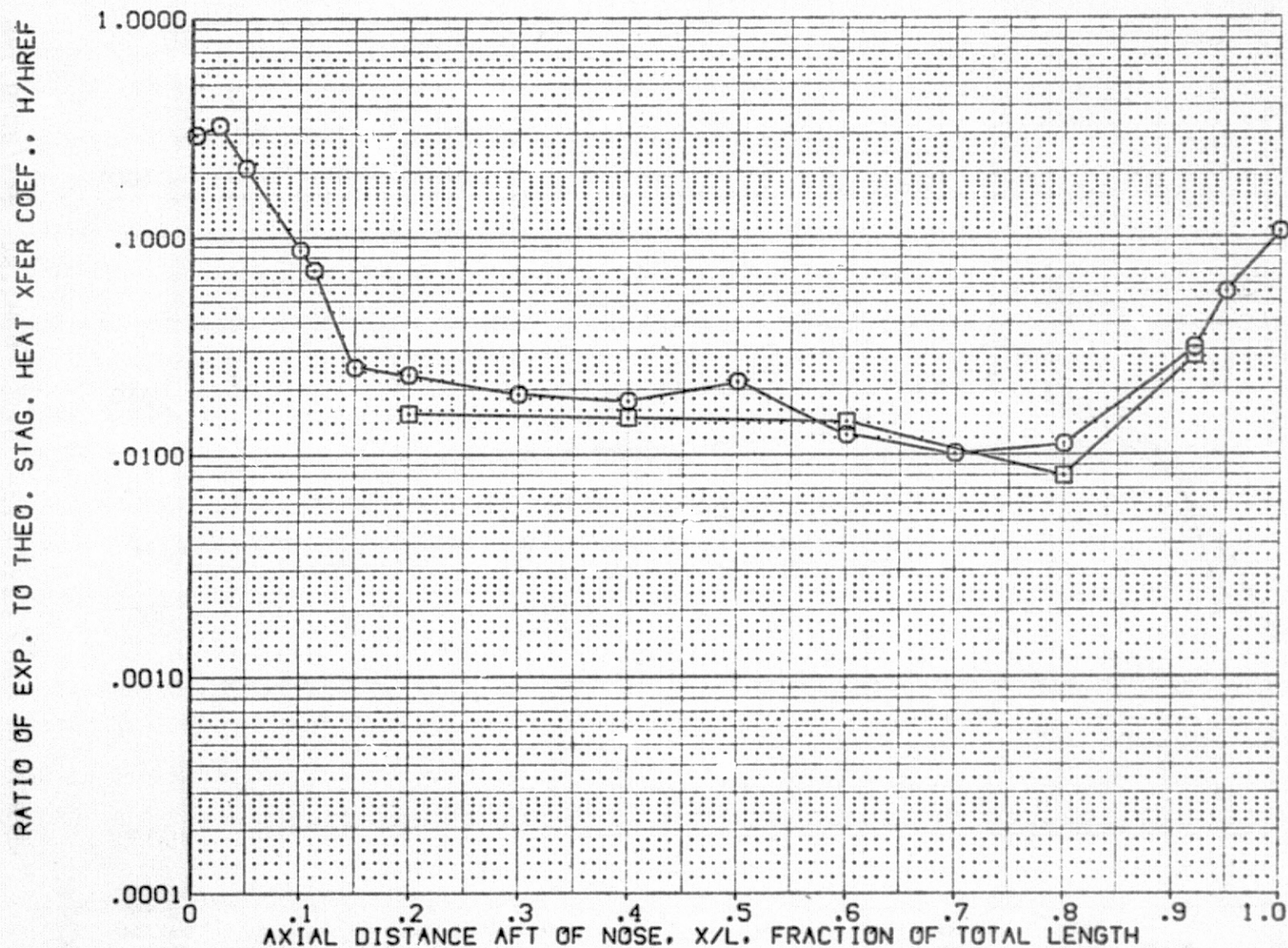


FIG. 46 SRB ALONE

PHI VARIATION RN = 2 MILLION / FT.

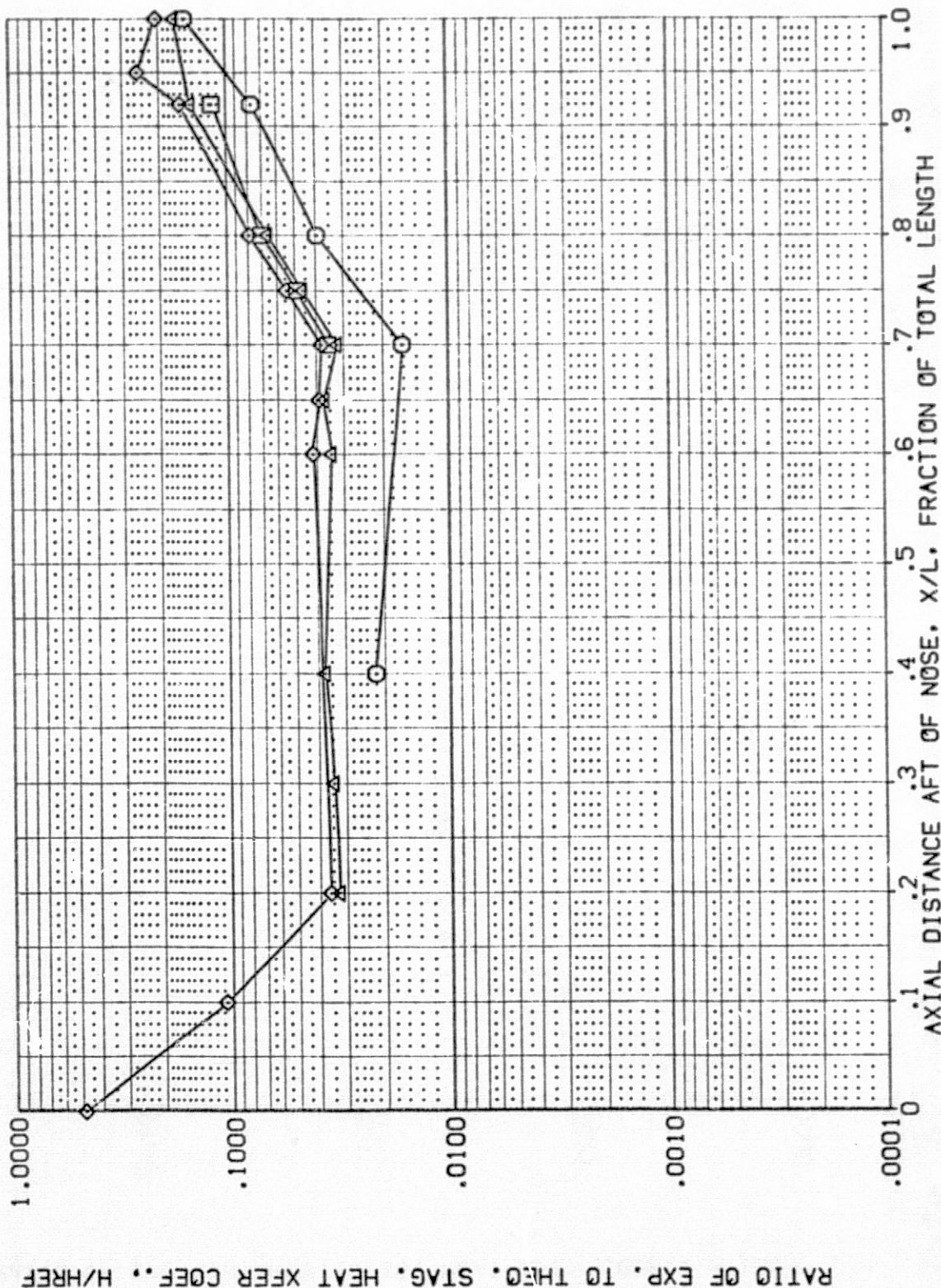


# IH16 S6 SOLID ROCKET BOOSTER SURFACE (CPQSO6)

PARAMETRIC VALUES  
MACH 3.700 ALPHA .000  
BETA -5.000

PHI  
90.000  
135.000  
180.000  
225.000

SYMBOL  
◇  
□  
△



AXIAL DISTANCE AFT OF NOSE, X/L, FRACTION OF TOTAL LENGTH

PHI VARIATION RN = 2 MILLION / FT.

FIG. 46 SRB ALONE

IH16 S6

## SOLID ROCKET BOOSTER SURFACE (CPQS06)

SYMBOL	PHI	HAW/HT	RN/L
○	270.000	.900	1.930
□	315.000		

PARAMETRIC VALUES		
MACH	ALPHA	BETA
3.700	-5.000	.000

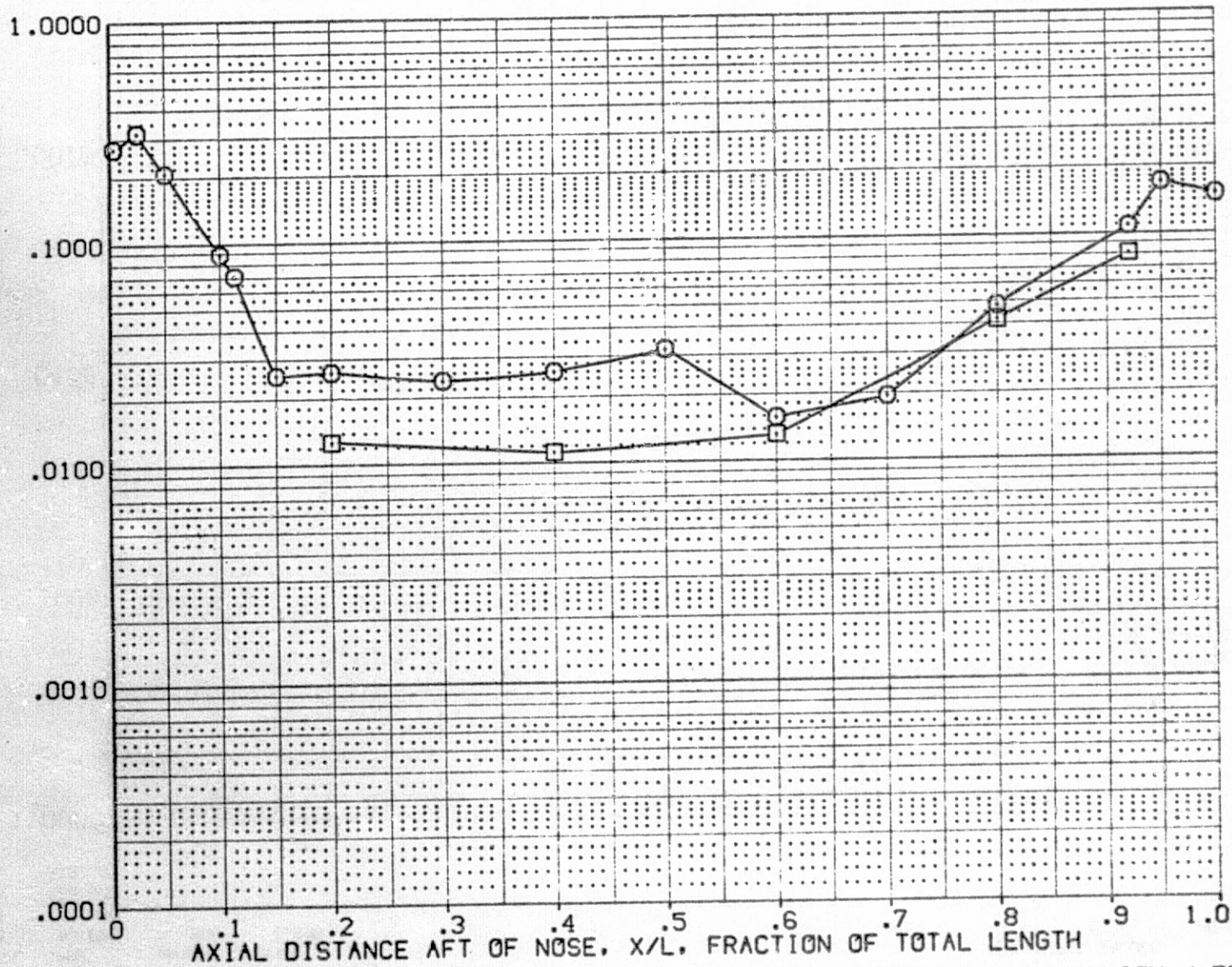
RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $H/H_{REF}$ 

FIG. 46 SRB ALONE

PHI VARIATION  $RN = 2$  MILLION / FT.



IH16 S6

## SOLID ROCKET BOOSTER SURFACE (CPQS05)

SYMBOL	PHI	HAW/HT	RN/L
○	90.000	.900	4.620
□	135.000		
◇	180.000		
△	225.000		

MACH	3.700	ALPHA	.000
BETA	.000		

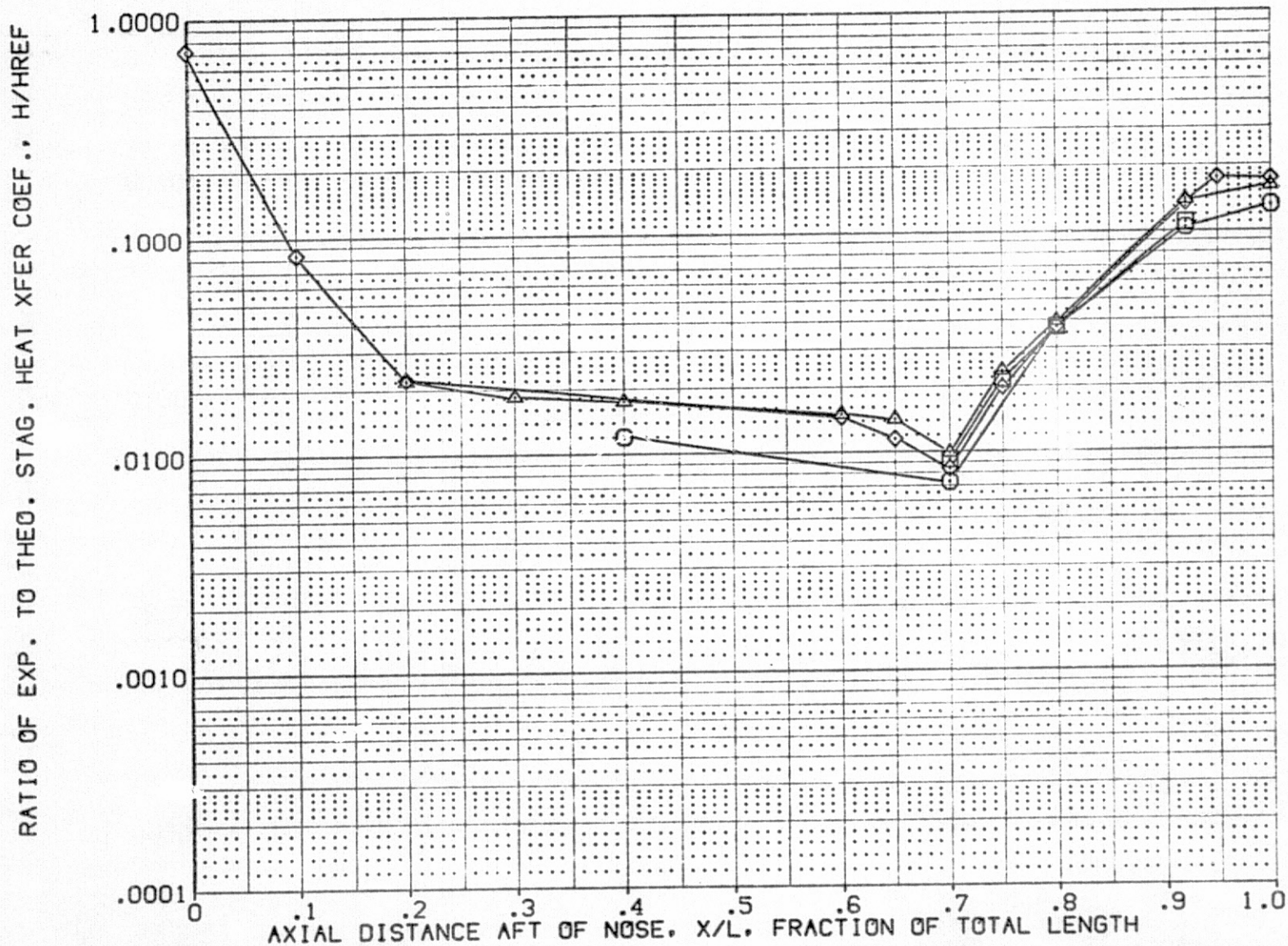


FIG. 47 SRB ALONE

PHI VARIATION RN = 5 MILLION / FT.

IH16 S6

## SOLID ROCKET BOOSTER SURFACE (CPQS05)

SYMBOL	PHI	HAW/HT	RN/L
○	270.000	.900	4.620
□	315.000		

PARAMETRIC VALUES		
MACH	3.700	ALPHA
BETA	.000	

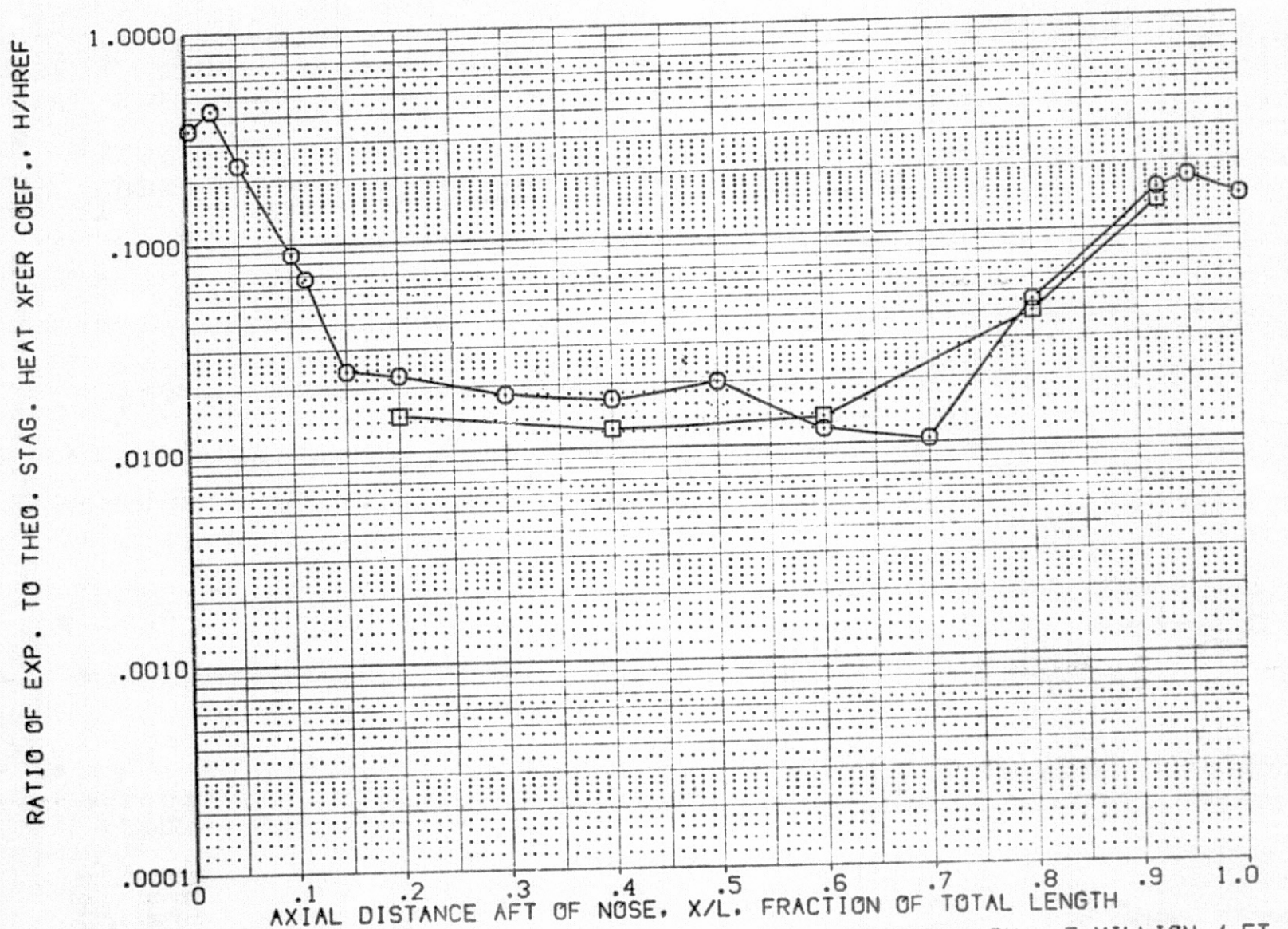


FIG. 47 SRB ALONE

PHI VARIATION RN = 5 MILLION / FT.



IH16 S6

## SOLID ROCKET BOOSTER SURFACE (CPQS06)

SYMBOL	PHI	HAW/HT	RN/L
○	90.000	.900	4.600
□	135.000		
◇	180.000		
△	225.000		

PARAMETRIC VALUES		
MACH	BETA	ALPHA
3.700	.000	-5.000

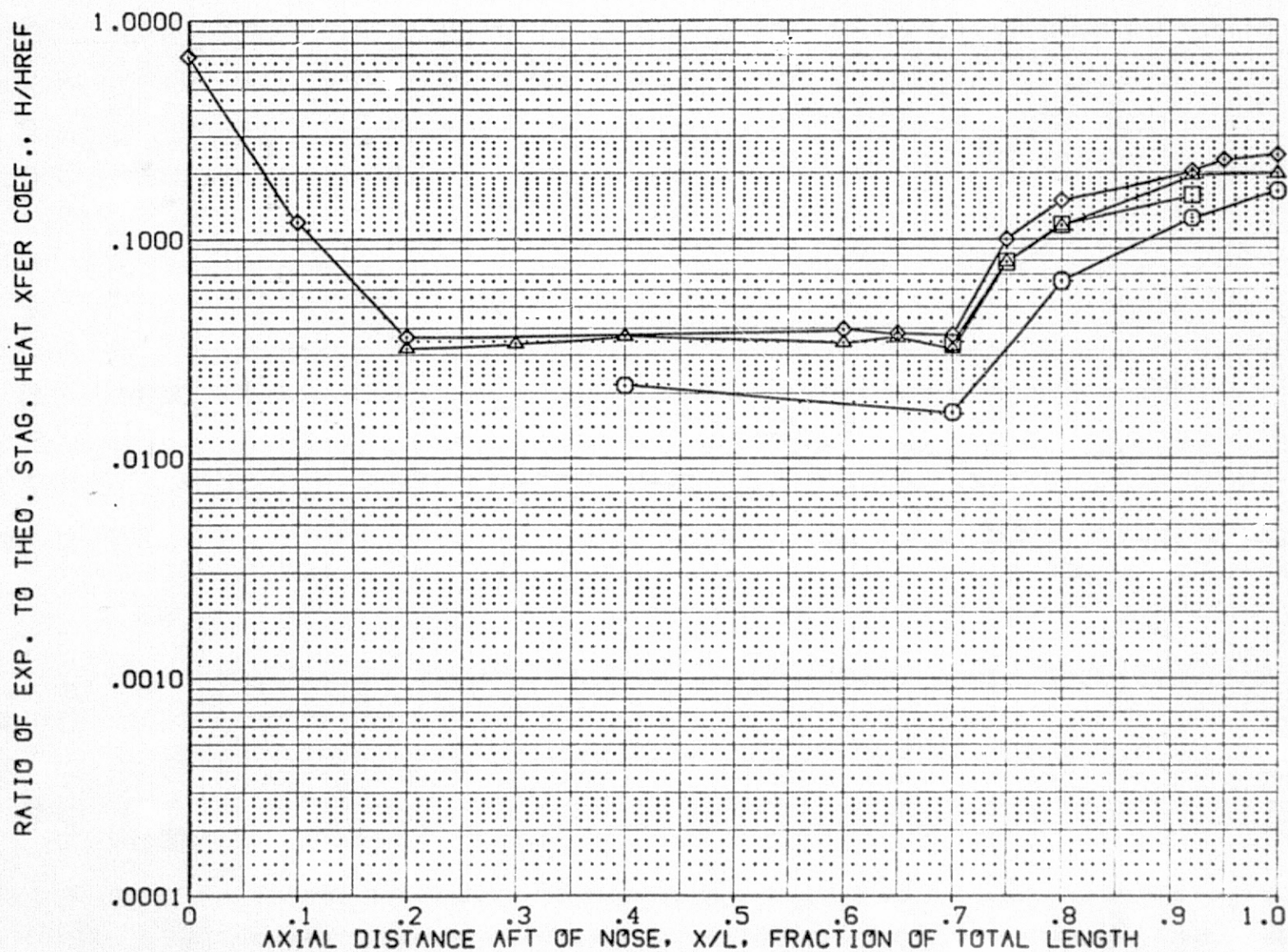


FIG. 47 SRB ALONE

PHI VARIATION RN = 5 MILLION / FT.

IH16 S6

## SOLID ROCKET BOOSTER SURFACE (CPQS06)

SYMBOL	PHI	HAW/HT	RN/L
○	270.000	.900	4.600
□	315.000		

PARAMETRIC VALUES		
MACH	3.700	ALPHA
BETA	.000	-5.000

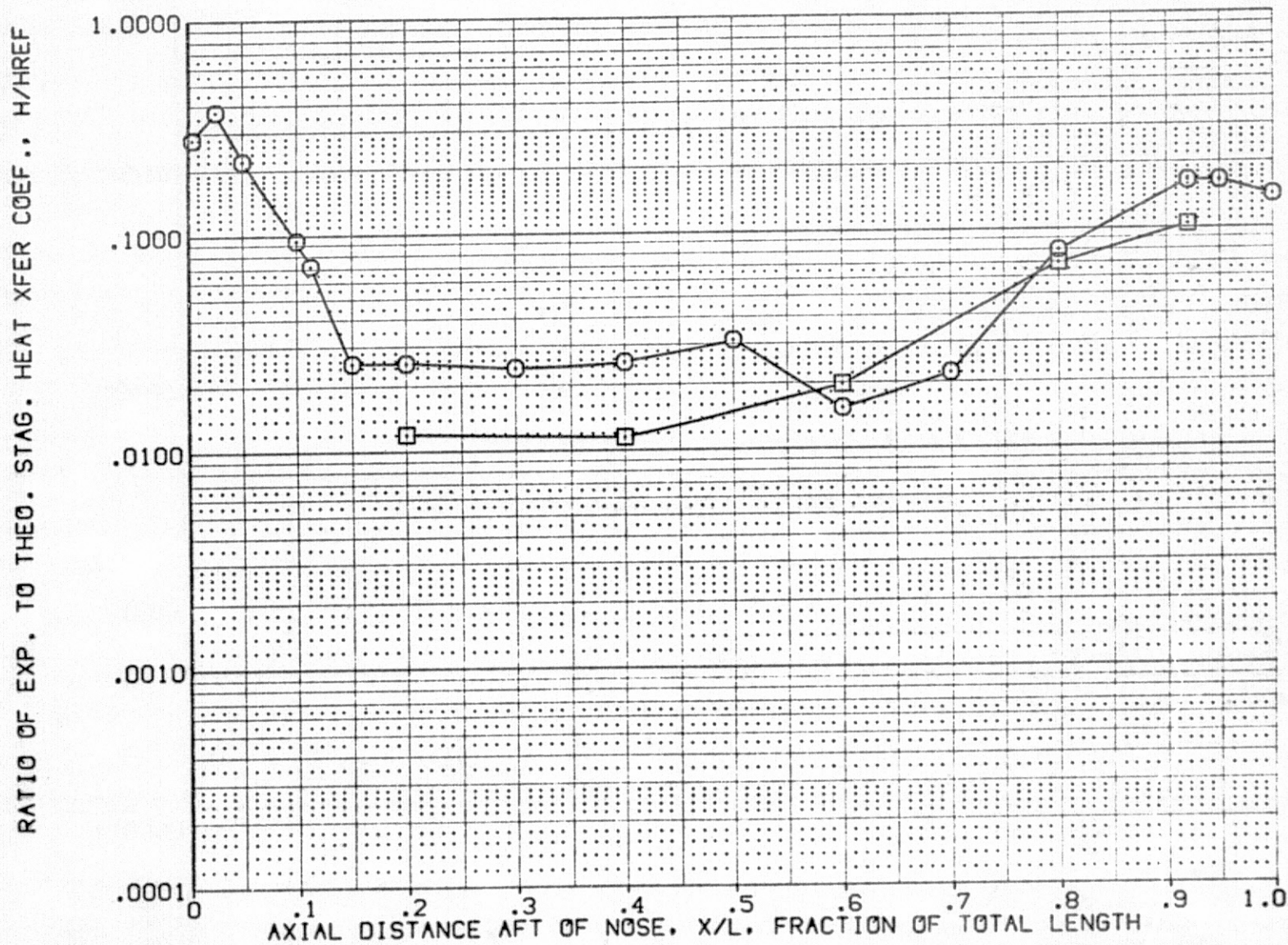


FIG. 47 SRB ALONE

PHI VARIATION  $RN = 5$  MILLION / FT.



IH16 S6

## SOLID ROCKET BOOSTER SURFACE (CPQS07)

SYMBOL	PHI	HAW/HT	RN/L
○	90.000	.900	4.570
□	135.000		
◇	180.000		
△	225.000		

PARAMETRIC VALUES		
MACH	3.700	/ALPHA
BETA	.000	20.000

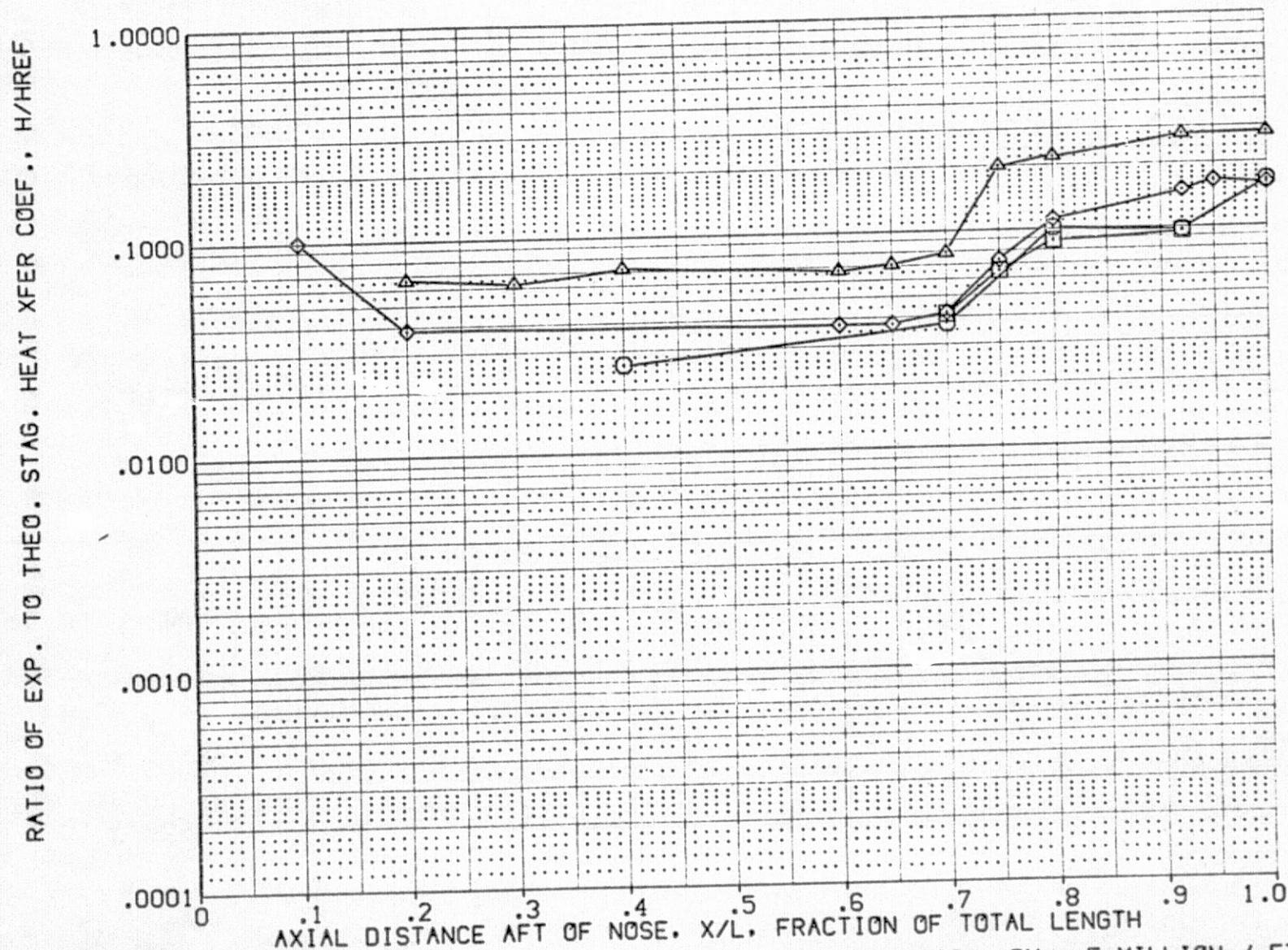


FIG. 47 SRB ALONE

PHI VARIATION RN = 5 MILLION / FT.

IH16 S6

## SOLID ROCKET BOOSTER SURFACE (CPQS07)

SYMBOL	PHI	HAV/HT	RN/L
○	270.000	.900	4.570
□	315.000		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
ALPHA	20.000

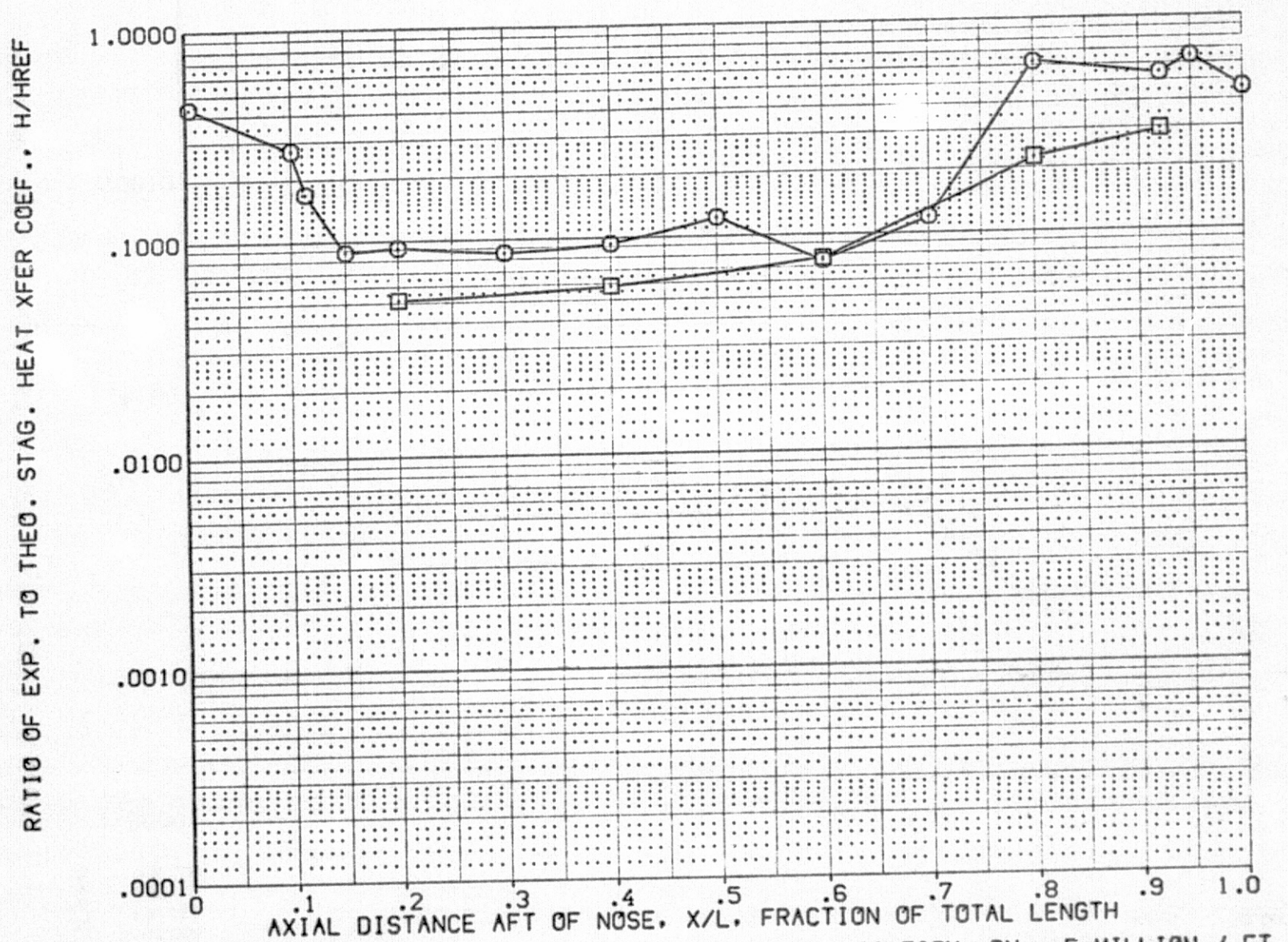


FIG. 47 SRB ALONE

PHI VARIATION  $RN = 5$  MILLION / FT.



IH16 S6

## SOLID ROCKET BOOSTER SURFACE (CPQS08)

SYMBOL	PHI	HAW/HT	RN/L
○	90.000	.900	4.540
□	135.000		
◇	180.000		

PARAMETRIC VALUES		
MACH	3.700	ALPHA
BETA	.000	45.000

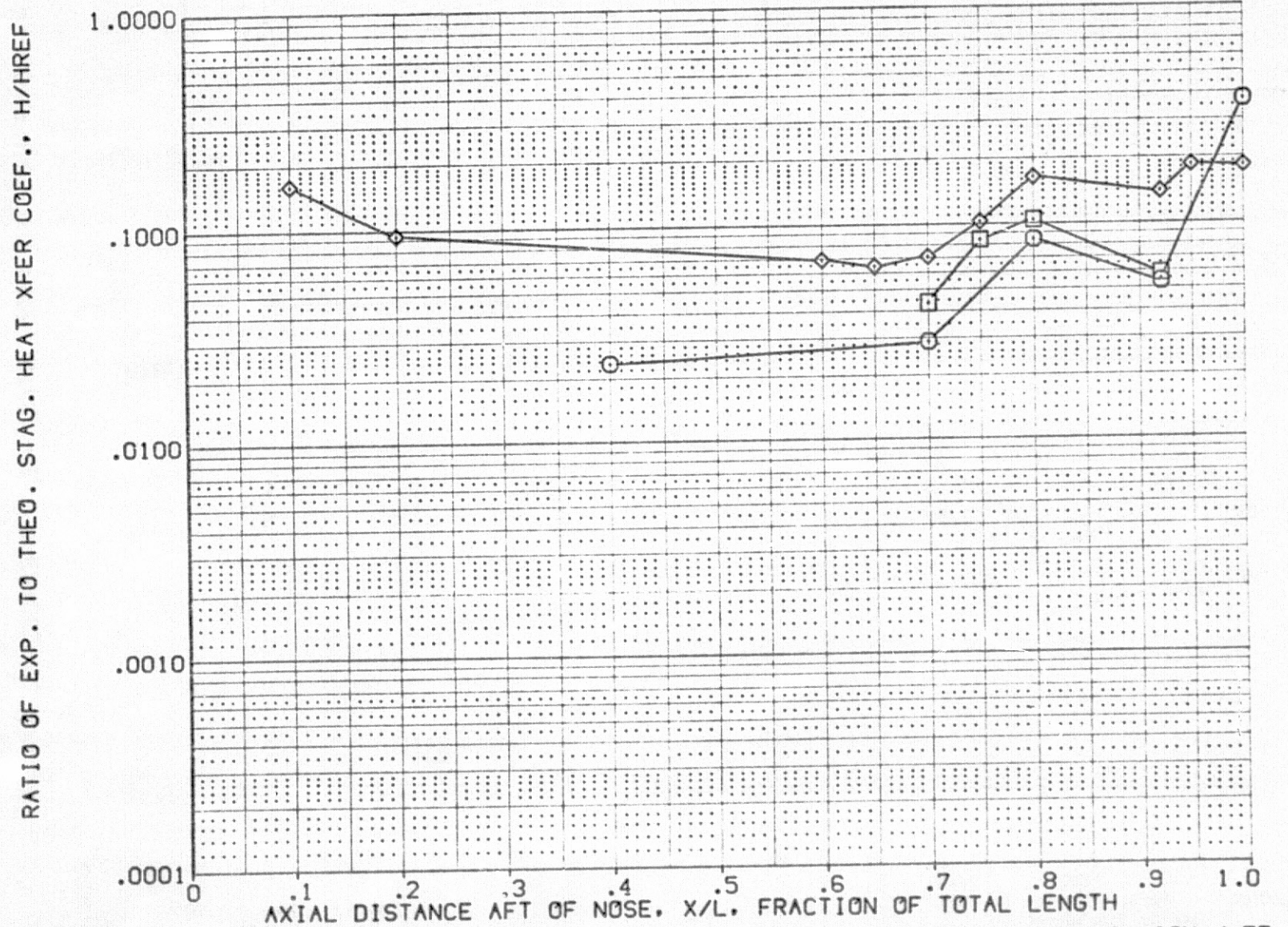


FIG. 47 SRB ALONE

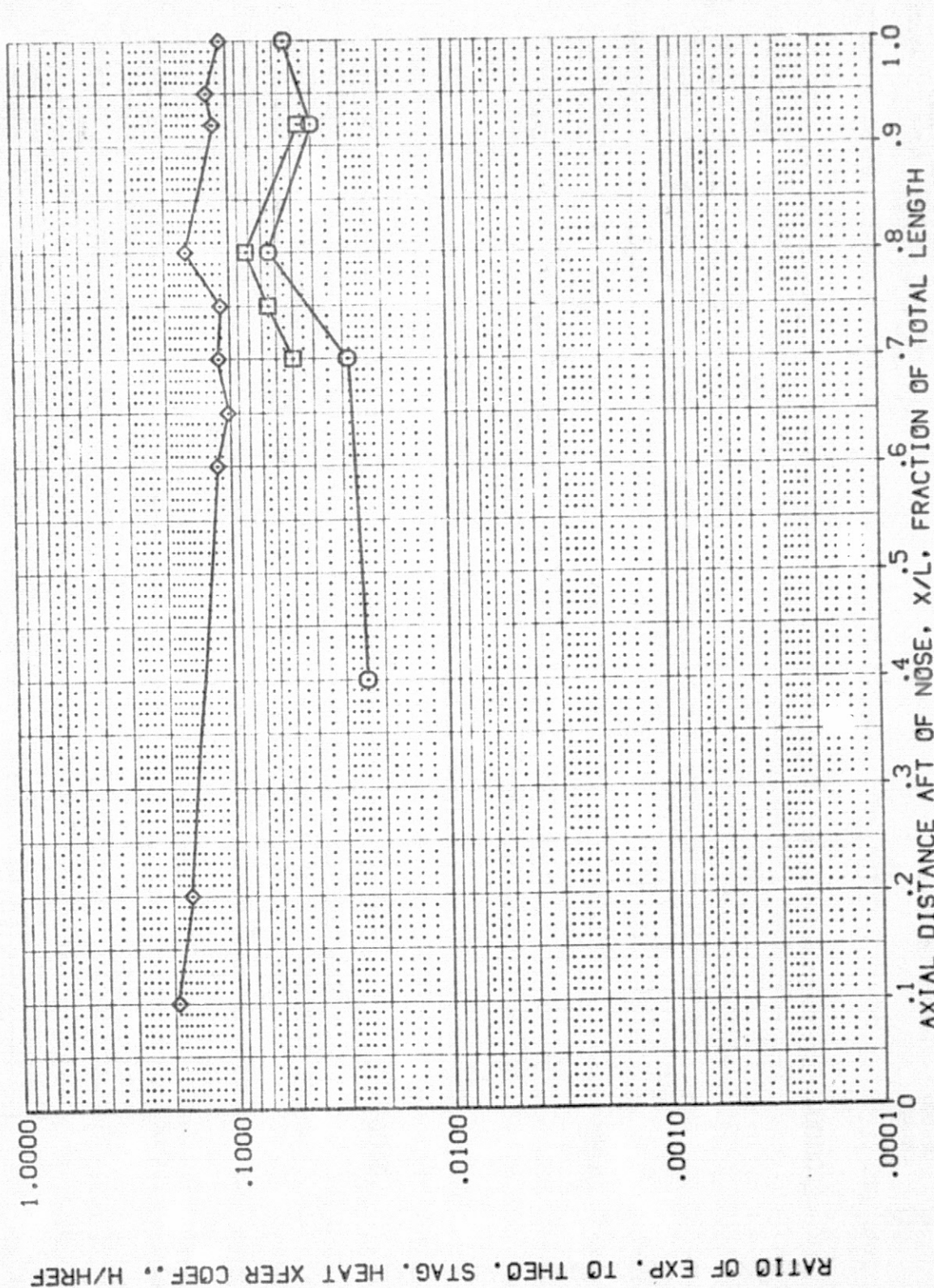
PHI VARIATION RN = 5 MILLION / FT.

# IH16 S6 SOLID ROCKET BOOSTER SURFACE (CPQSO9)

PARAMETRIC VALUES  
MACH 3.700 ALPHA 70.000  
BETA .000

PHI 90.000  
HAY/HT .900  
RV/L 4.560

SYMBOL  
◇ 90.000  
□ 135.000  
◇ 180.000



PHI VARIATION RN = 5 MILLION / FT.

FIG. 47 SRB ALONE



IH16 S6

## SOLID ROCKET BOOSTER SURFACE (CPQS10)

SYMBOL	PHI	HAW/HT	RN/L
○	90.000	.900	4.540
□	135.000		
◇	180.000		

PARAMETRIC VALUES		
MACH	ALPHA	
3.700	90.000	
BETA	.000	

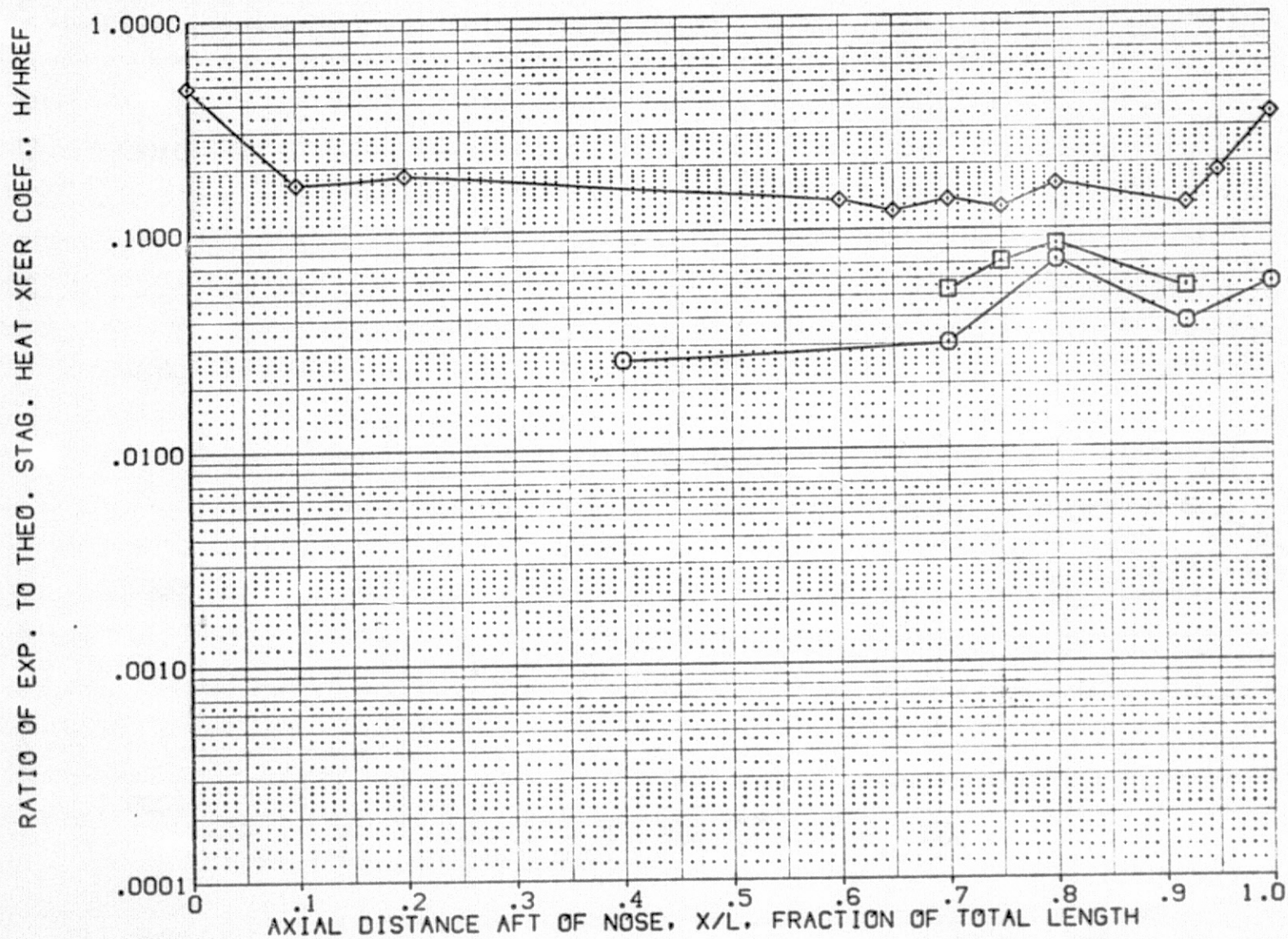


FIG. 47 SRB ALONE

PHI VARIATION  $RN = 5 \text{ MILLION / FT.}$

SYMBOL PHI HAV/HT RN/L  
 O 90.000 .900 1.930  
 □ 135.000

PARAMETRIC VALUES  
 MACH 3.700 BETA .000  
 DELTAH .175

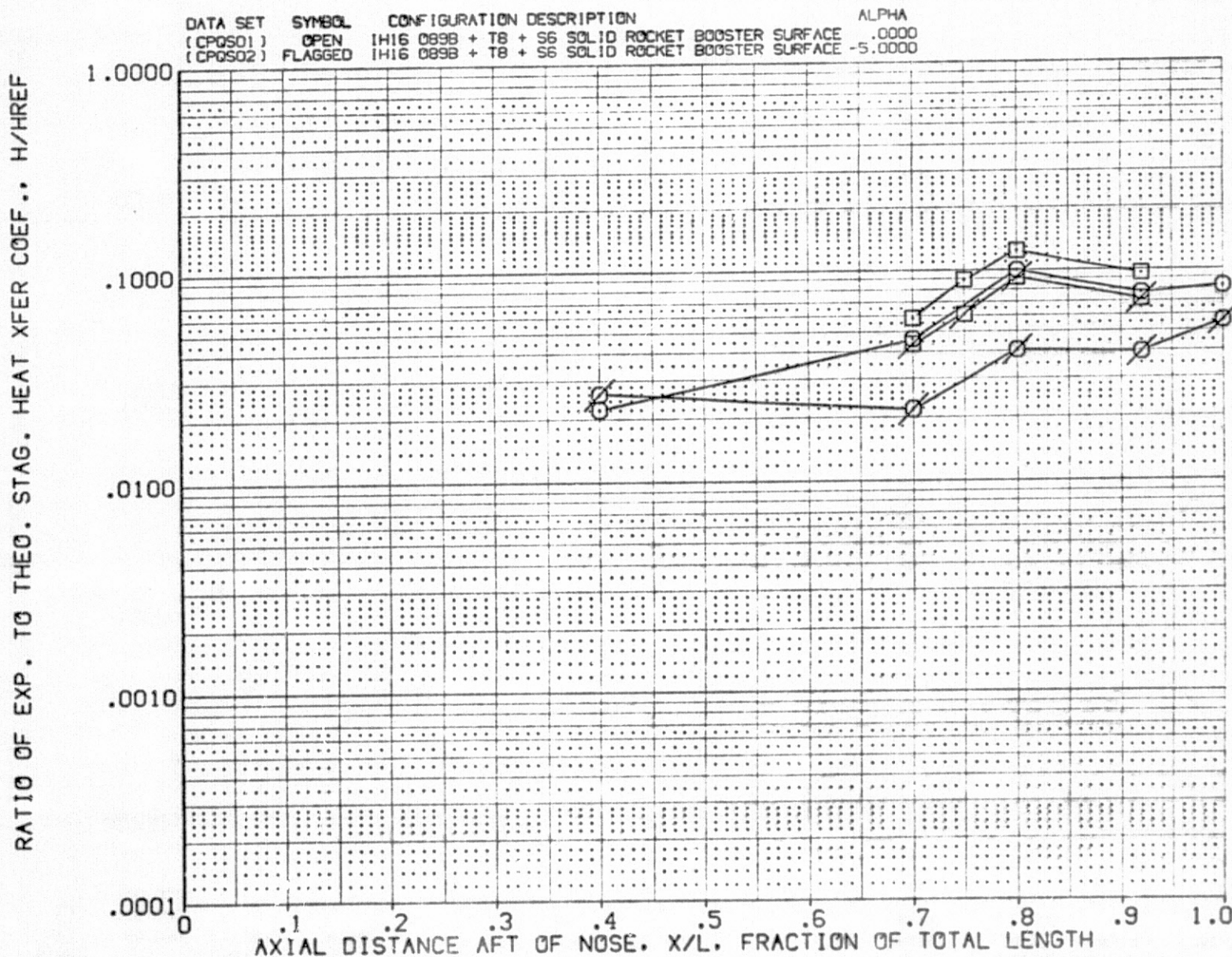


FIG. 48 INTEGRATED VEHICLE - SRB SURFACE ALPHA VARIATION RN/FT = 2 DH = .175



SYMBOL	PHI	HAV/HT	RN/L
○	180.000	.900	1.930
□	225.000		

PARAMETRIC VALUES		
MACH	3.700	BETA
DELTAH	.175	.000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

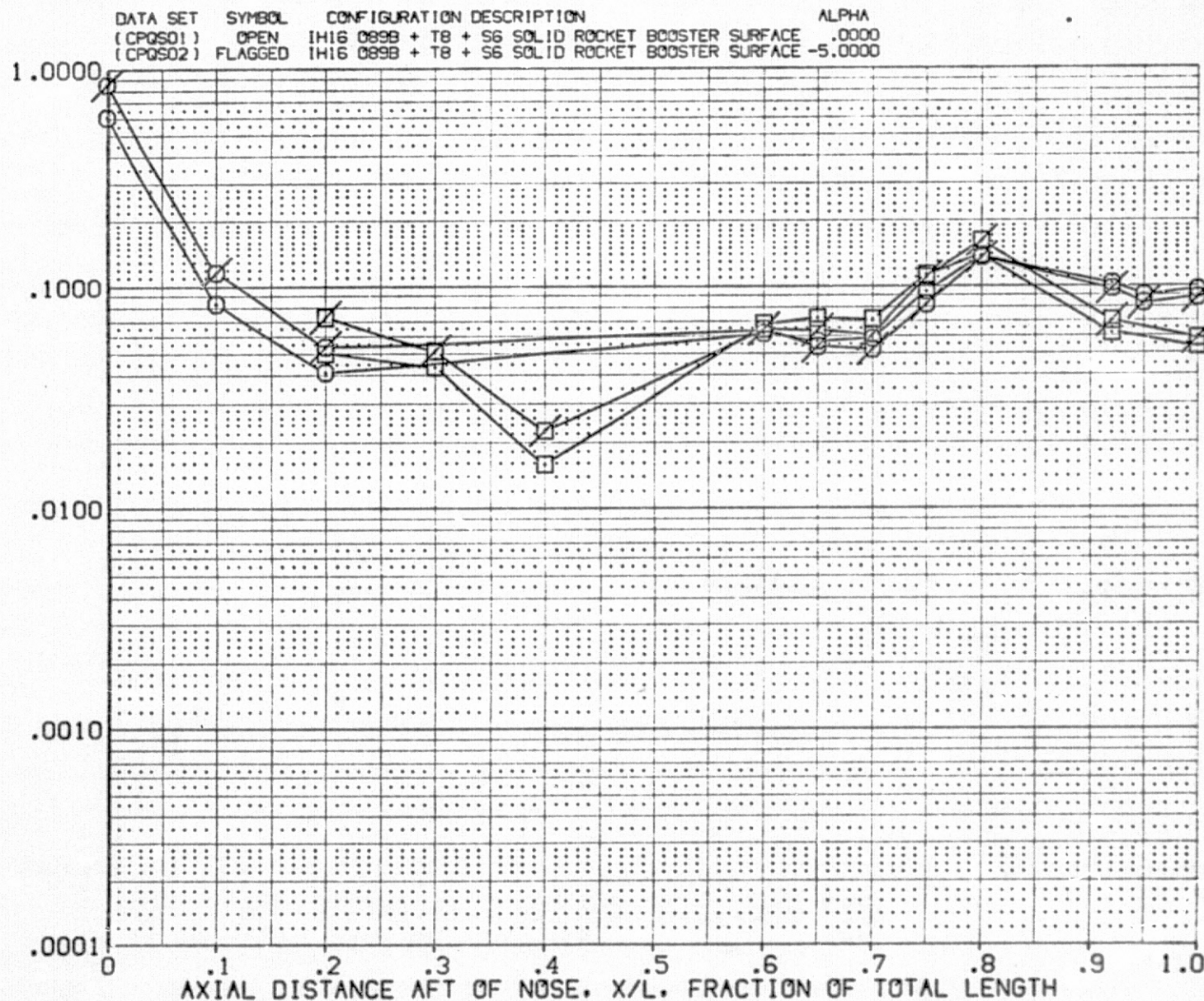


FIG. 48 INTEGRATED VEHICLE - SRB SURFACE ALPHA VARIATION RN/FT = 2 DH = .175

SYMBOL PHI  
 ○ 270.000  
 □ 315.000

HAW/HT .900  
 RN/L 1.930

PARAMETRIC VALUES  
 MACH 3.700  
 DELTAH .175  
 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

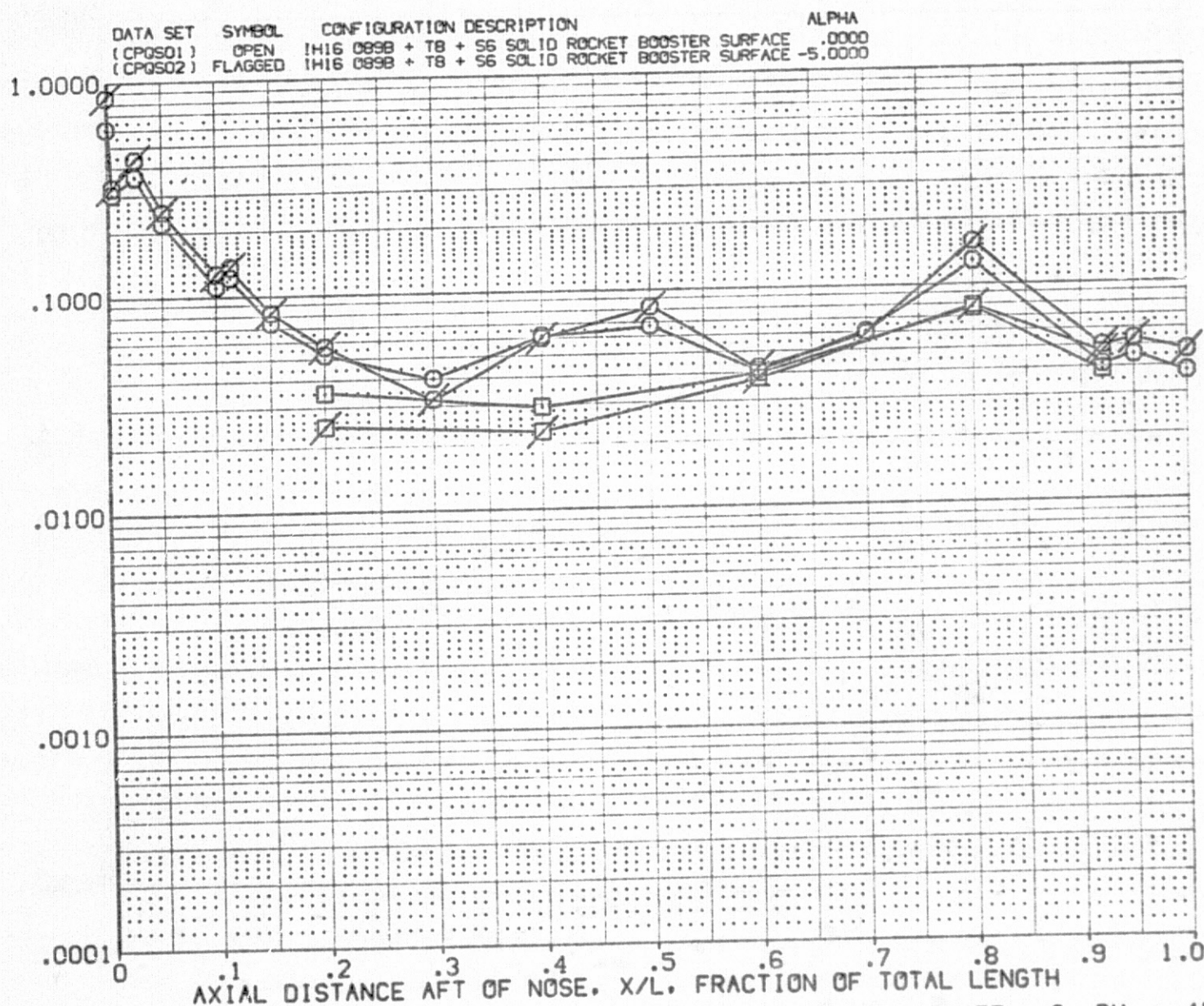


FIG. 48 INTEGRATED VEHICLE - SRB SURFACE ALPHA VARIATION RN/FT = 2 DH = .175



SYMBOL PHI HAV/HT RN/L  
 ○ 90.000 .900 1.990  
 □ 135.000

PARAMETRIC VALUES  
 MACH 3.700 BETA .000  
 DELTAH .069

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

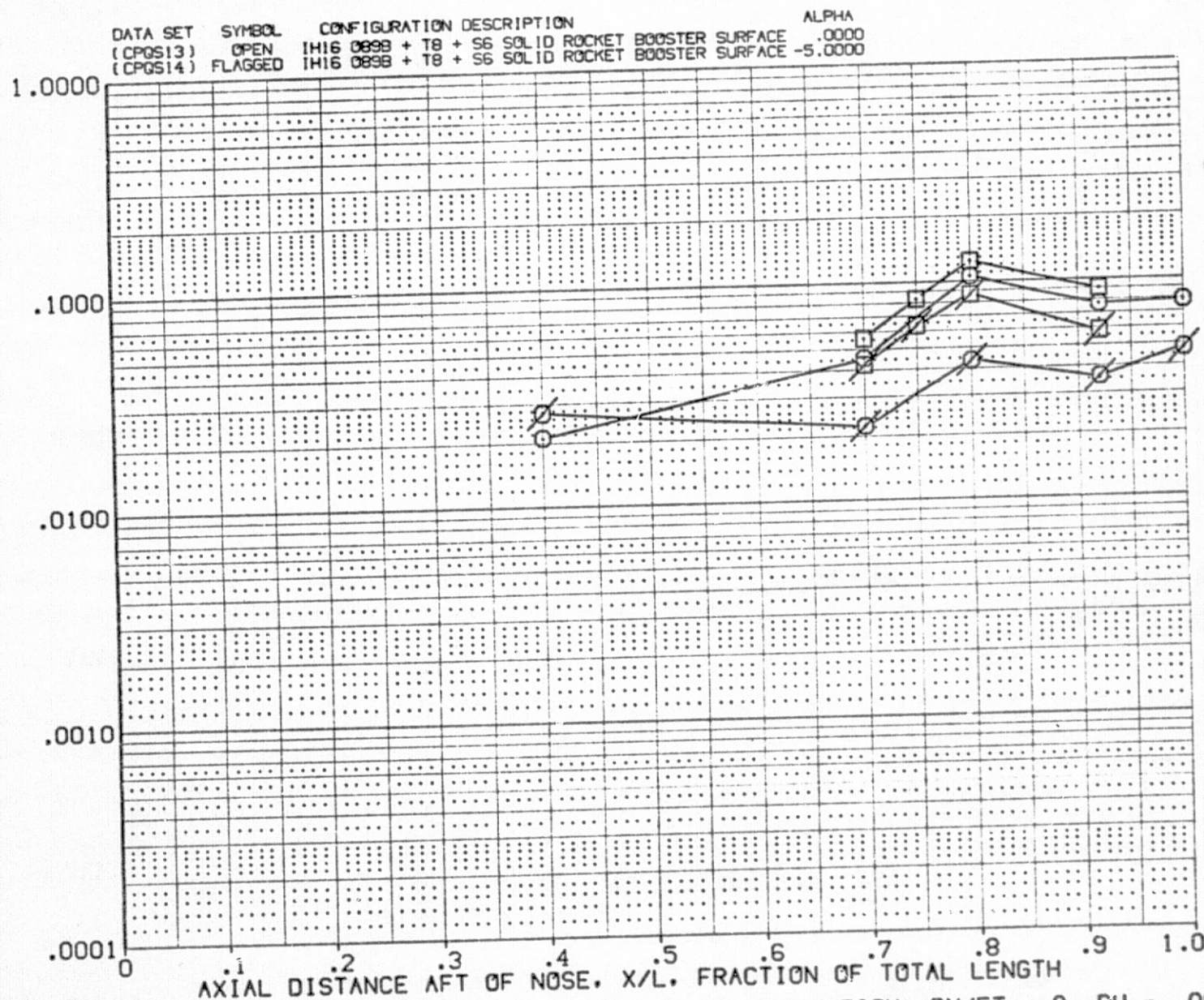


FIG. 49 INTEGRATED VEHICLE - SRB SURFACE ALPHA VARIATION RN/FT = 2 DH = .069

SYMBOL PHI HAV/HT RN/L  
 ○ 180.000  
 □ 225.000

PARAMETRIC VALUES  
 MACH 3.700 BETA .000  
 DELTAH .069

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

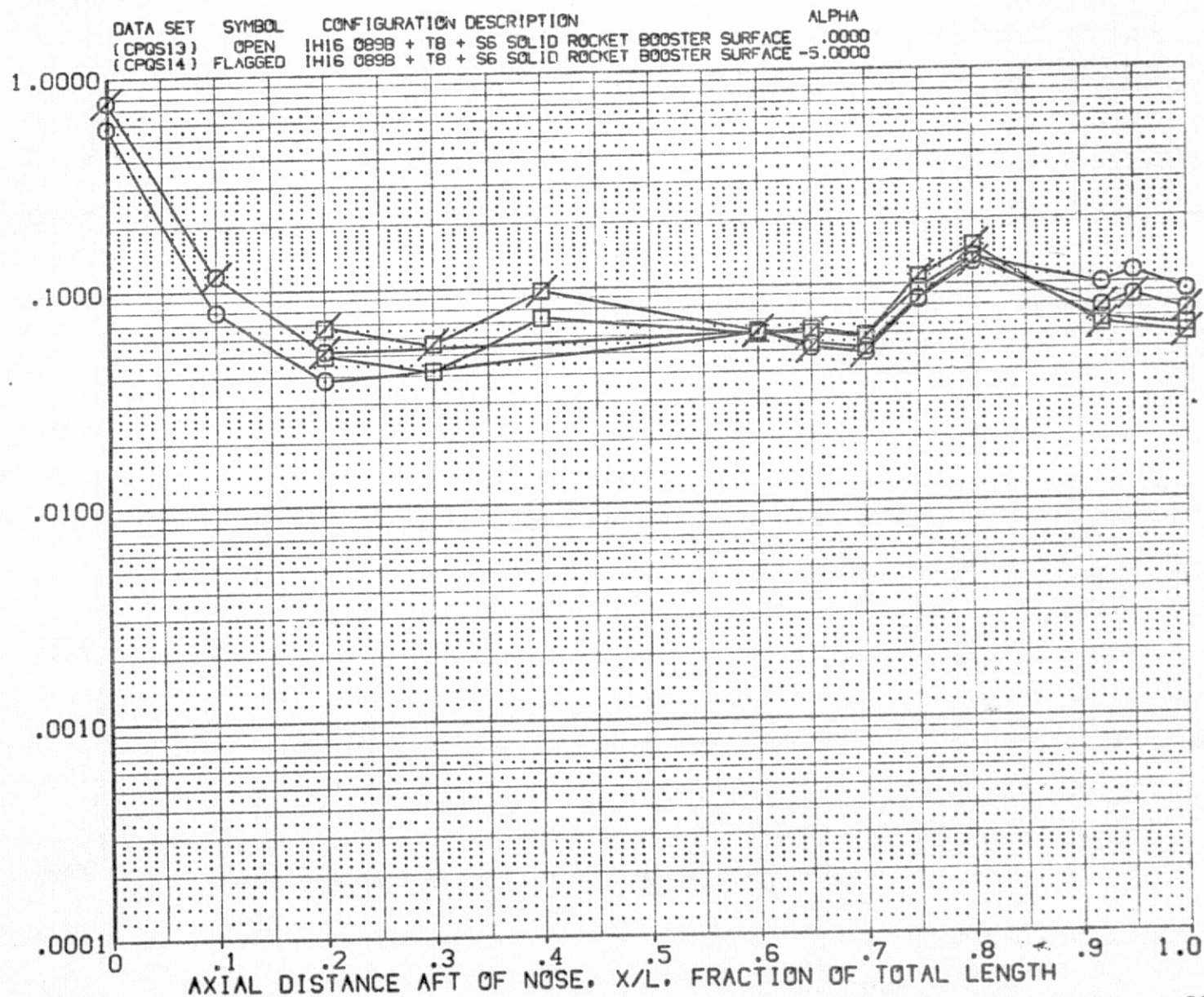


FIG. 49 INTEGRATED VEHICLE - SRB SURFACE ALPHA VARIATION RN/FT = 2 DH = .069



SYMBOL	PHI	HAW/HT	RN/L
○	270.000	.900	1.990
□	315.000		

PARAMETRIC VALUES		
MACH	3.700	BETA
DELTAH	.069	.000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

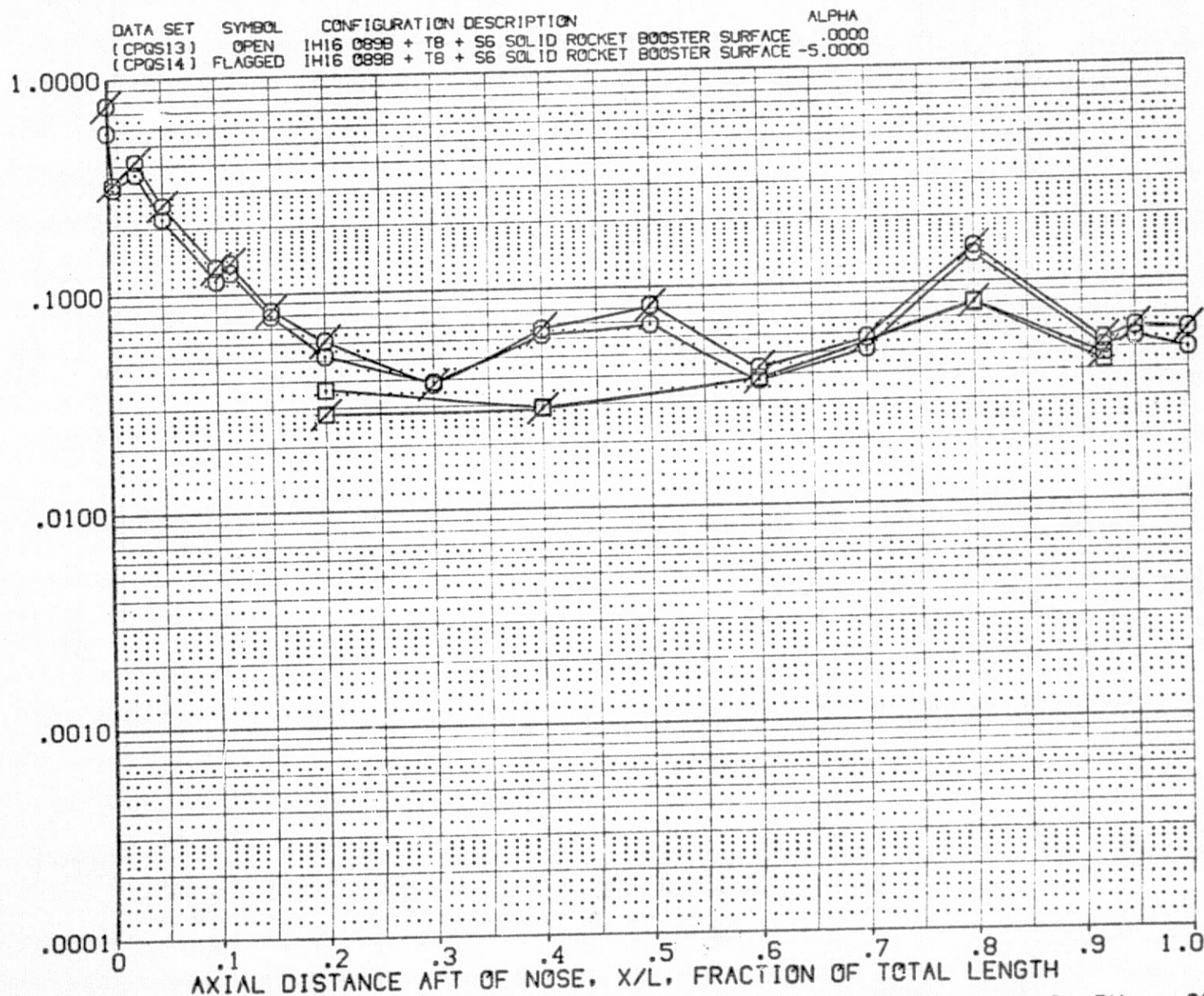


FIG. 49 INTEGRATED VEHICLE - SRB SURFACE ALPHA VARIATION RN/FT = 2 DH = .069

SYMBOL PHI HAW/HT RN/L  
 ○ 90.000 .900 4.570  
 □ 135.000

PARAMETRIC VALUES  
 MACH 3.700 BETA .000  
 DELTAH .175

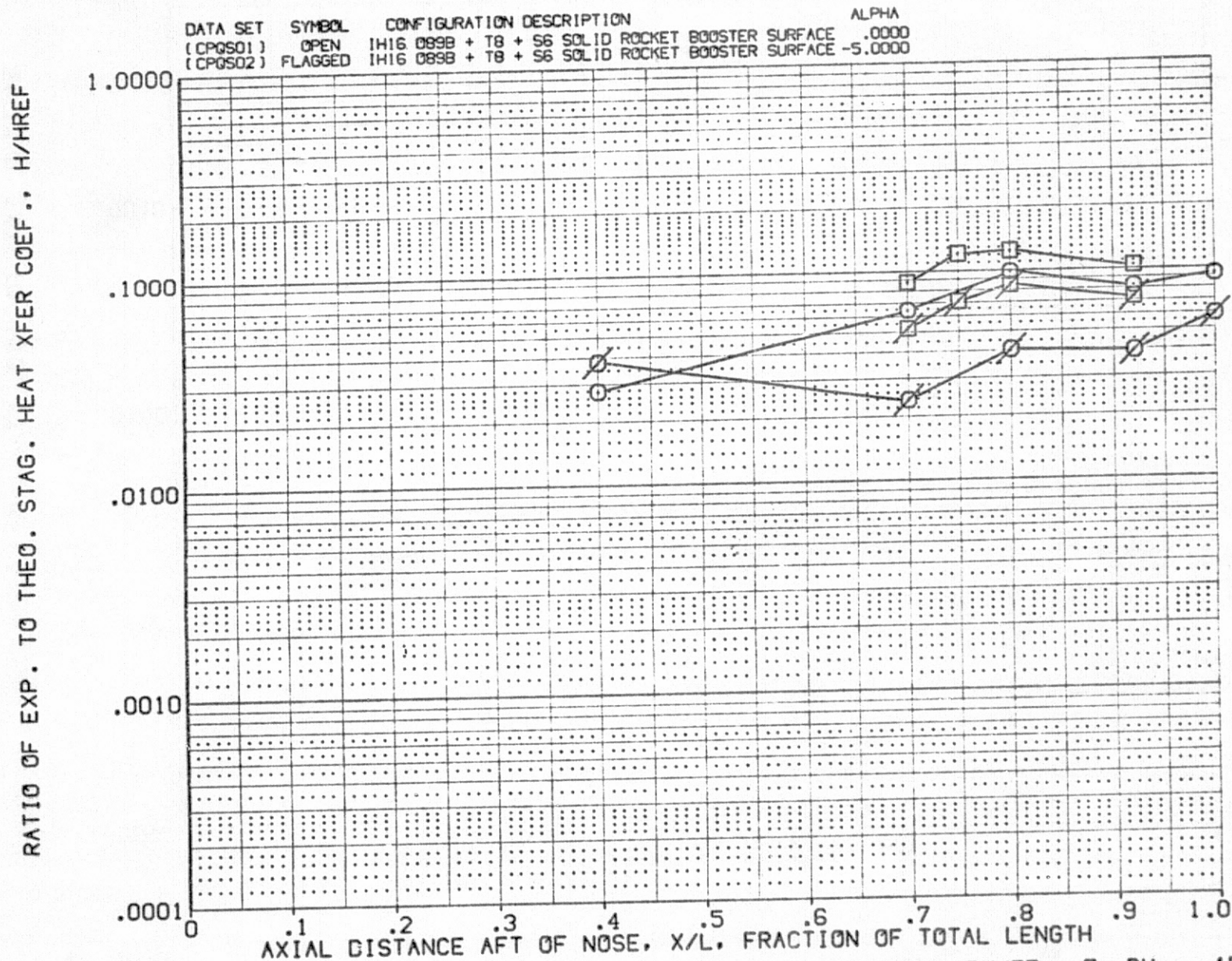


FIG. 50 INTEGRATED VEHICLE - SRB SURFACE ALPHA VARIATION RN/FT = 5 DH = .175



SYMBOL PHI HAW/HT RN/L  
 ○ 180.000 .900 4.570  
 □ 225.000

PARAMETRIC VALUES  
 MACH 3.700 BETA .000  
 DELTAH .175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF. H/HREF

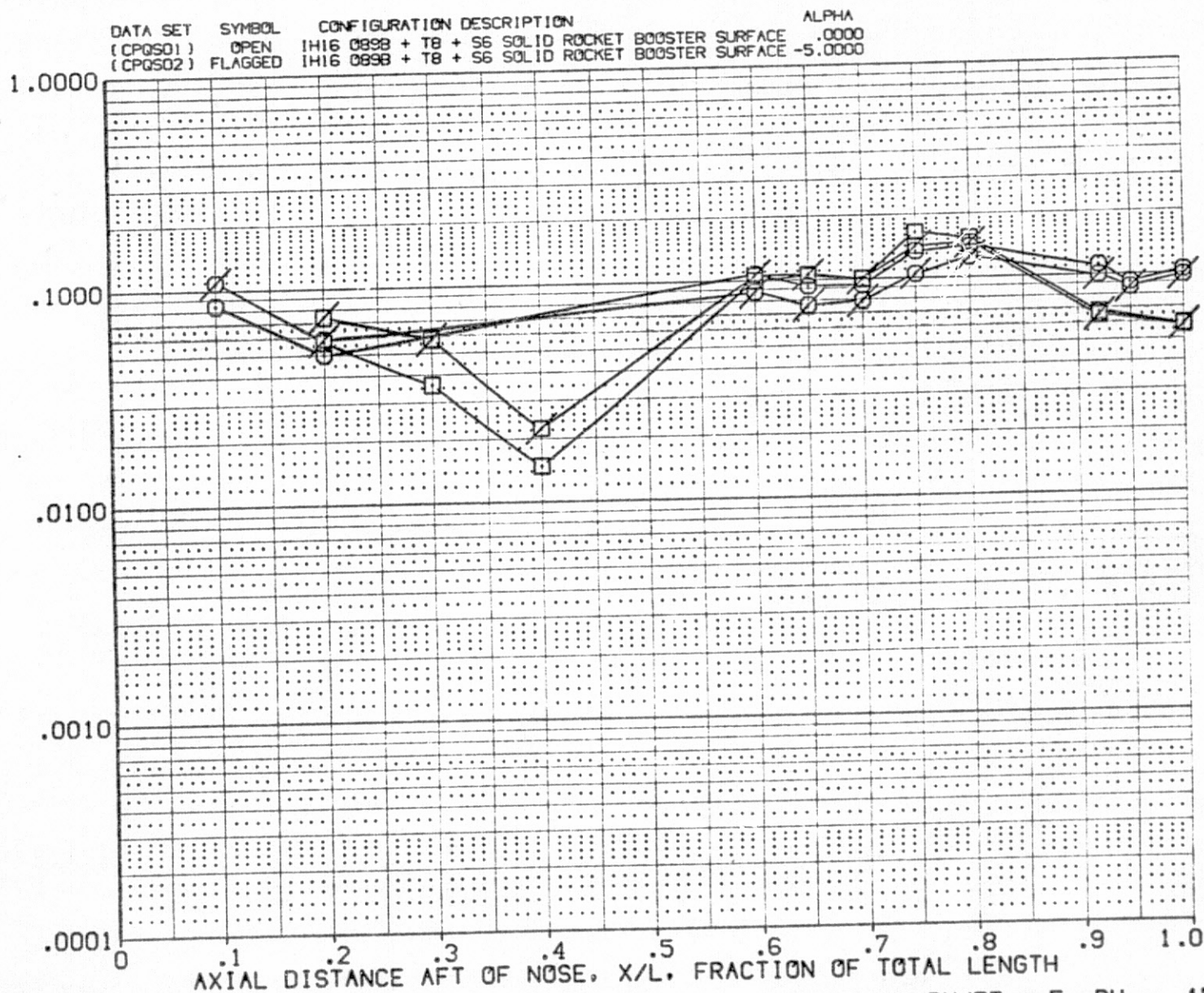


FIG. 50 INTEGRATED VEHICLE - SRB SURFACE ALPHA VARIATION RN/FT = 5 DH = .175

SYMBOL PHI HAV/HT RN/L  
 ○ 270.000  
 □ 315.000

PARAMETRIC VALUES  
 MACH 3.700 BETA .000  
 DELTAH .175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

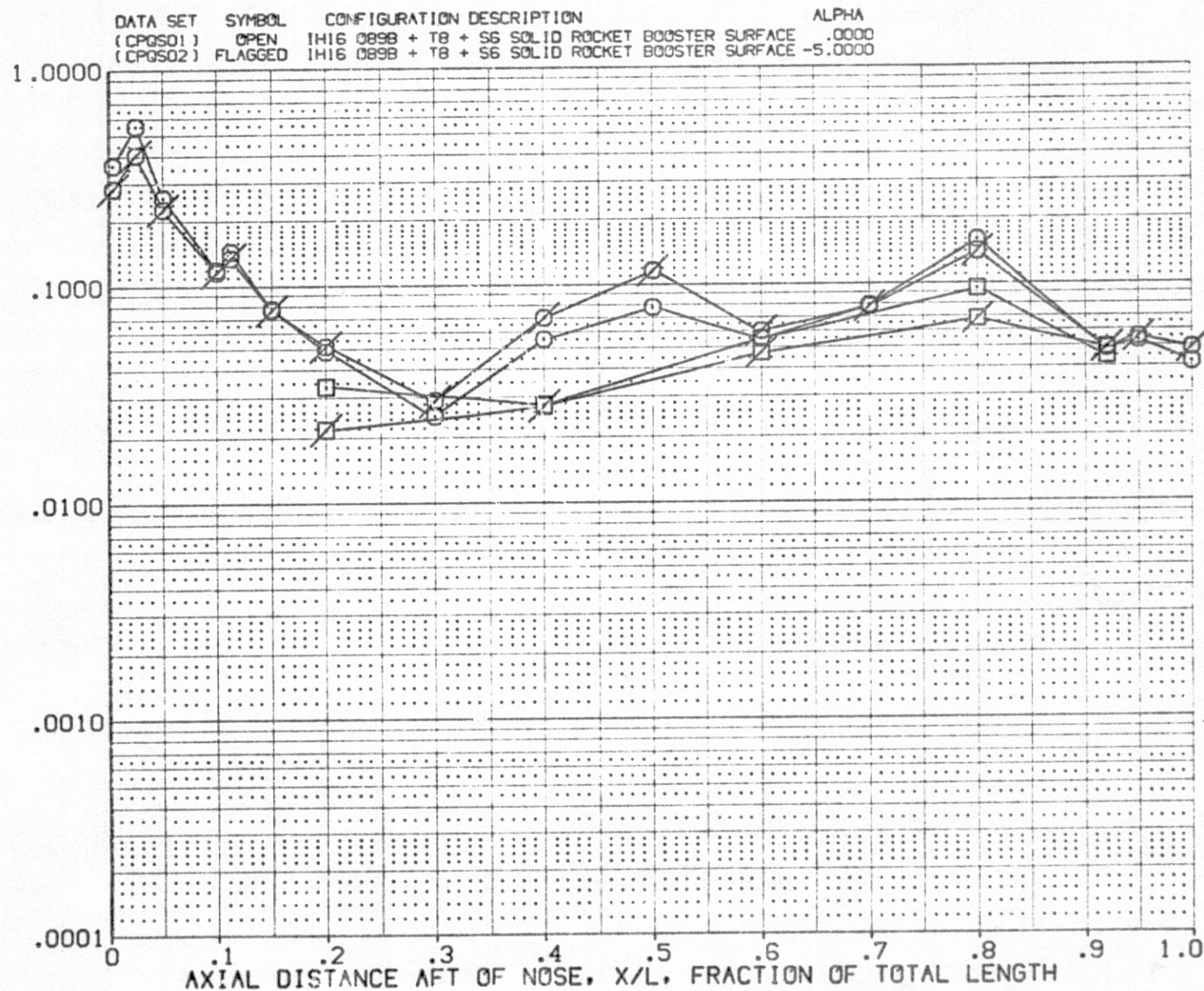


FIG. 50 INTEGRATED VEHICLE - SRB SURFACE ALPHA VARIATION RN/FT = 5 DH = .175



SYMBOL	PHI	HAW/HT	RN/L
○	90.000	.900	4.550
□	135.000		

PARAMETRIC VALUES		
MACH	3.700	BETA
DELTAH	.069	.000

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA
(CPOS13)	OPEN	IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE	.0000
(CPOS14)	FLAGGED	IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE	-5.0000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.. H/HREF

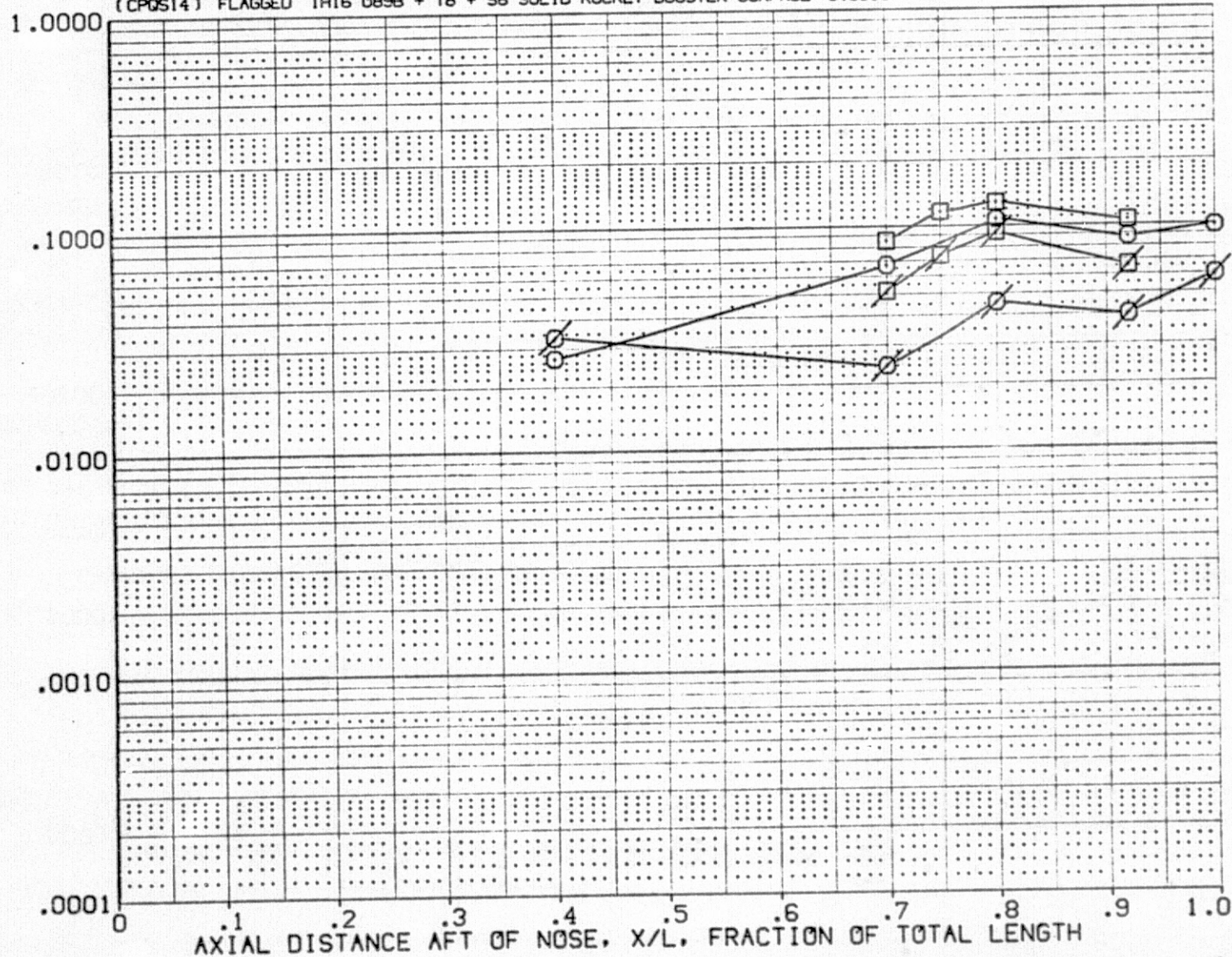


FIG. 51 INTEGRATED VEHICLE - SRB SURFACE ALPHA VARIATION RN/FT = 5 DH = .069

SYMBOL PHI HAW/HT RN/L  
 ○ 180.000  
 □ 225.000

PARAMETRIC VALUES  
 MACH 3.700 BETA .000  
 DELTAH .069

DATA SET SYMBOL CONFIGURATION DESCRIPTION ALPHA  
 (CPQS13) OPEN IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE .0000  
 (CPQS14) FLAGGED IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE -5.0000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

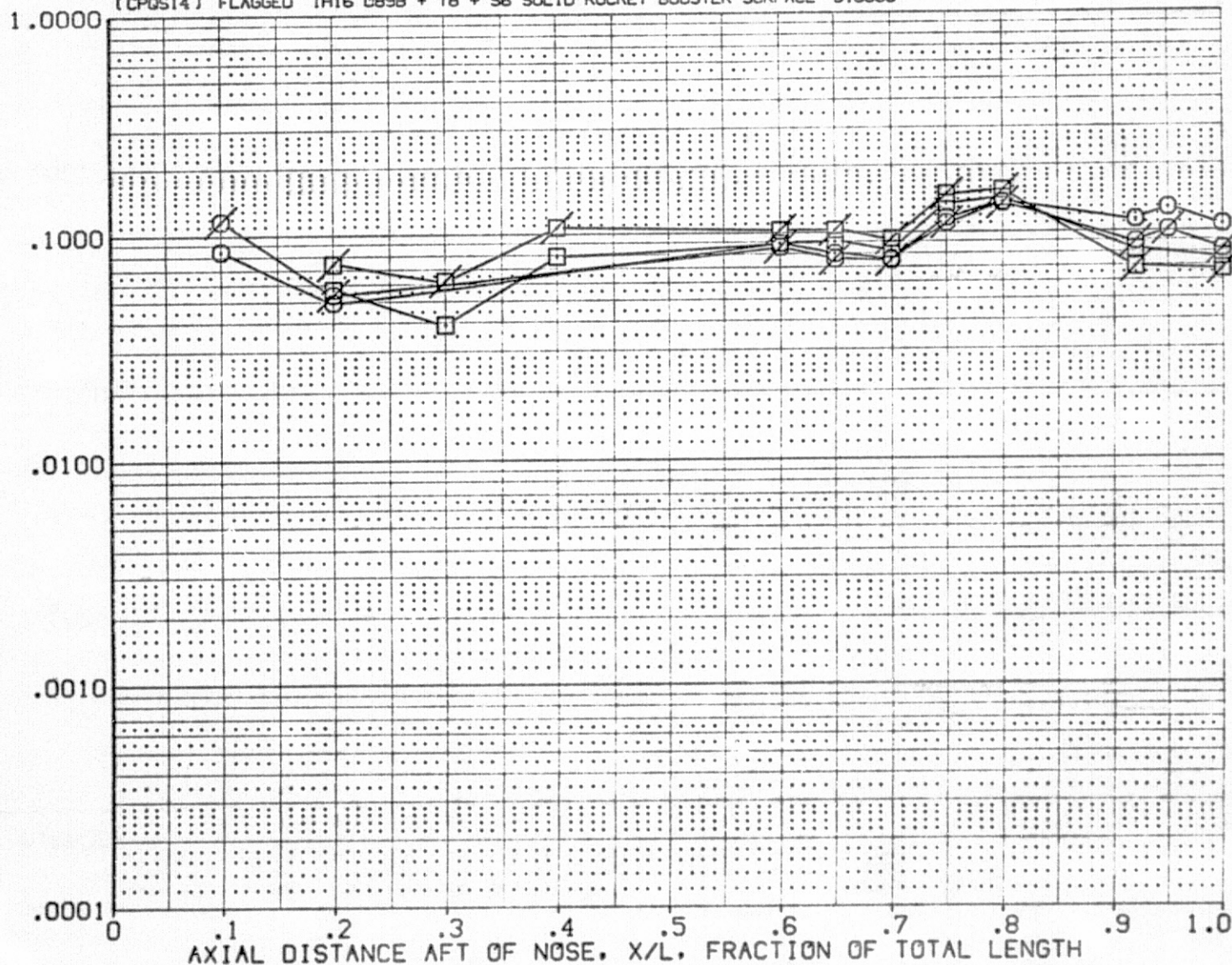


FIG. 51 INTEGRATED VEHICLE - SRB SURFACE ALPHA VARIATION RN/FT = 5 DH = .069



SYMBOL	PHI	HAW/HT	RN/L
○	270.000	.900	4.550
□	315.000		

PARAMETRIC VALUES		
MACH	3.700	BETA .000
DELTAH	.069	

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

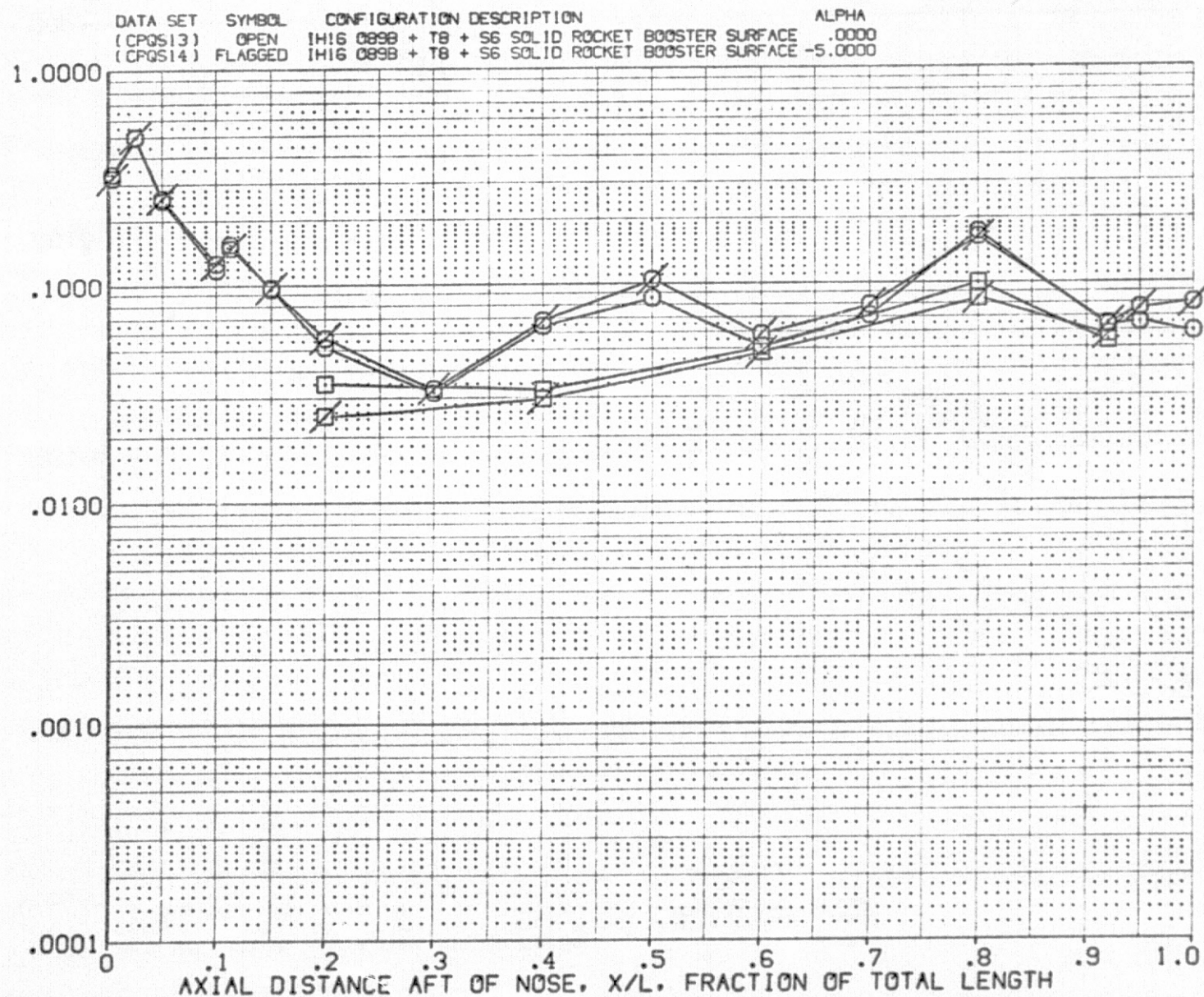


FIG. 51 INTEGRATED VEHICLE - SRB SURFACE ALPHA VARIATION RN/FT = 5 DH = .069

SYMBOL PHI HAV/HT RN/L  
 ○ 90.000 .900 1.930  
 □ 135.000

PARAMETRIC VALUES  
 MACH 3.700 BETA .000

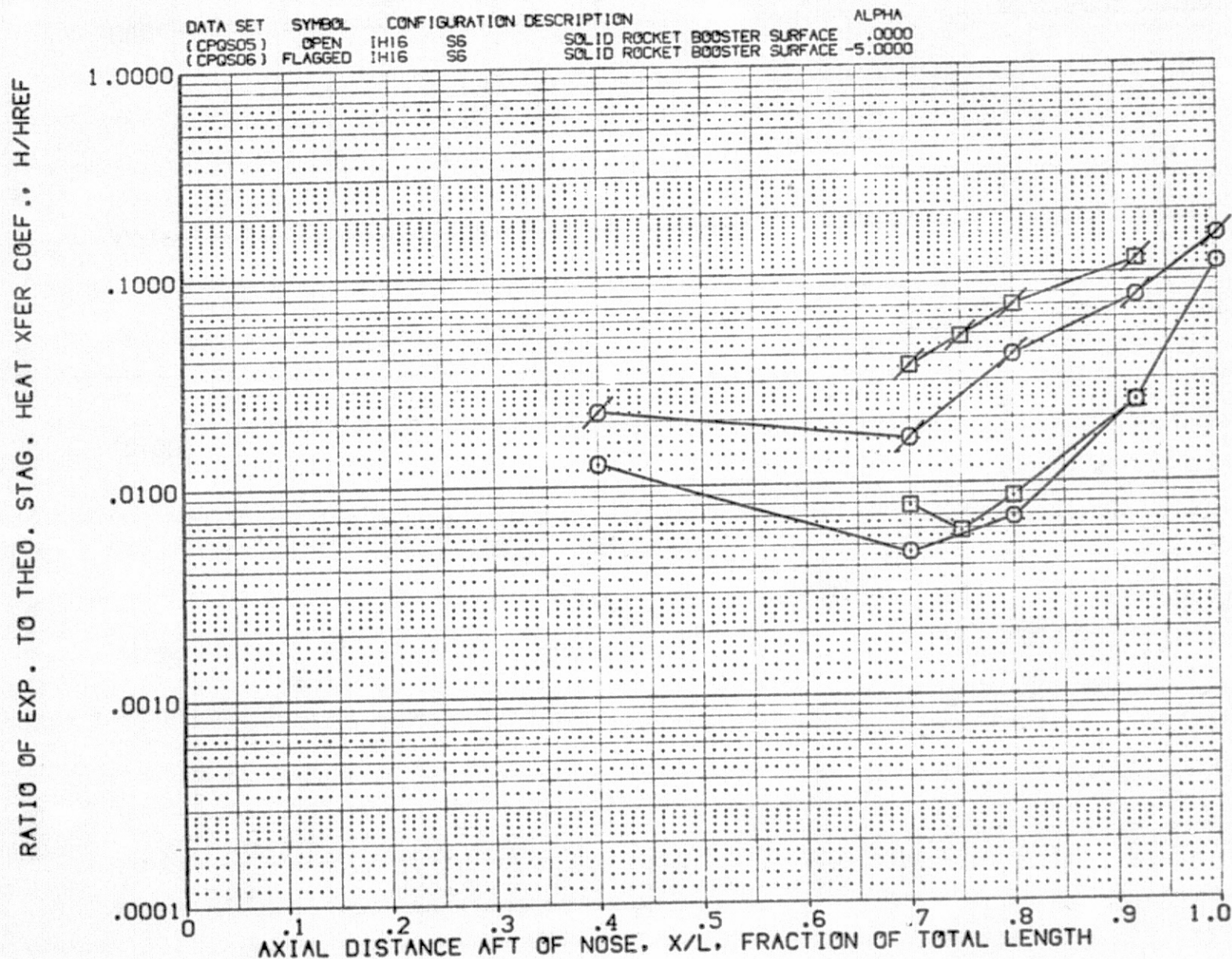


FIG. 52 SRB ALONE

RN/FT = 2



PARAMETRIC VALUES  
MACH 3.700 BETA .000

DATA SET SYMBOL  
(CP0505) OPEN  
(CP0506) FLAGGED

SYMBOL PHI  
○ 180.000  
□ 225.000

CONFIGURATION DESCRIPTION  
S6 SOLID ROCKET BOOSTER SURFACE  
S6 SOLID ROCKET BOOSTER SURFACE

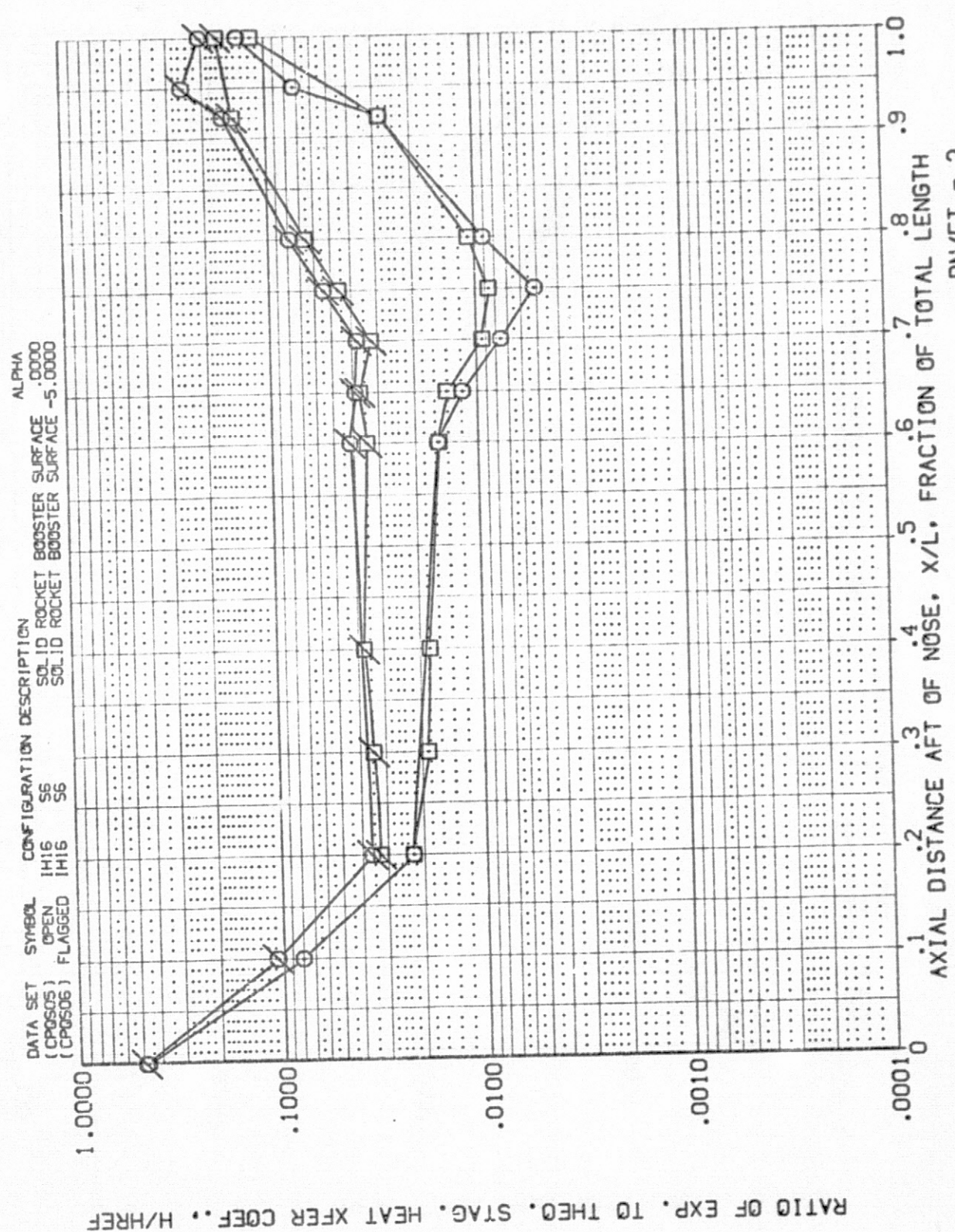


FIG. 52 SRB ALONE

SYMBOL PHI HAW/HT RN/L  
 ○ 270.000 .900 1.930  
 □ 315.000

MACH 3.700 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

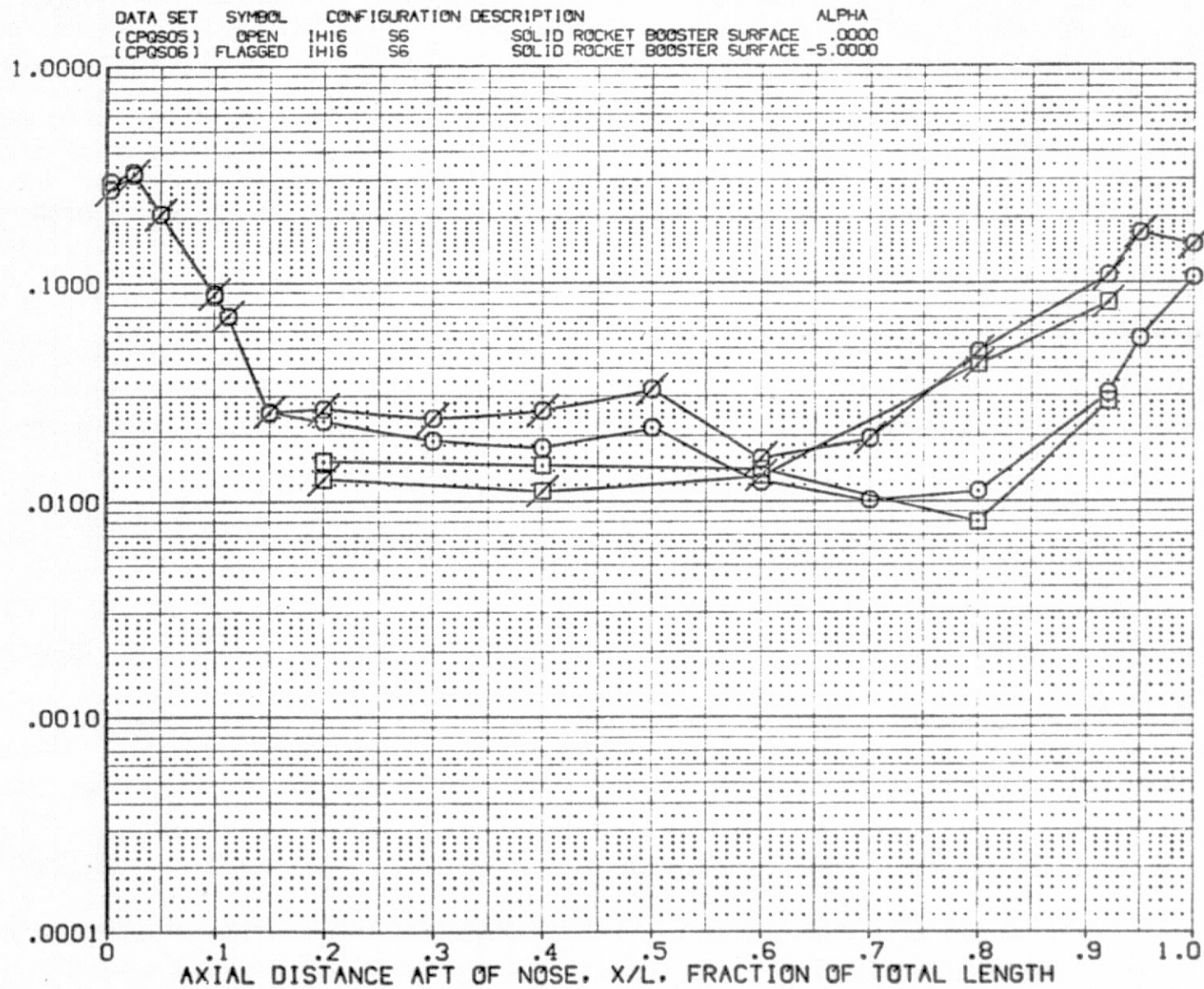


FIG. 52 SRB ALONE

RN/FT = 2



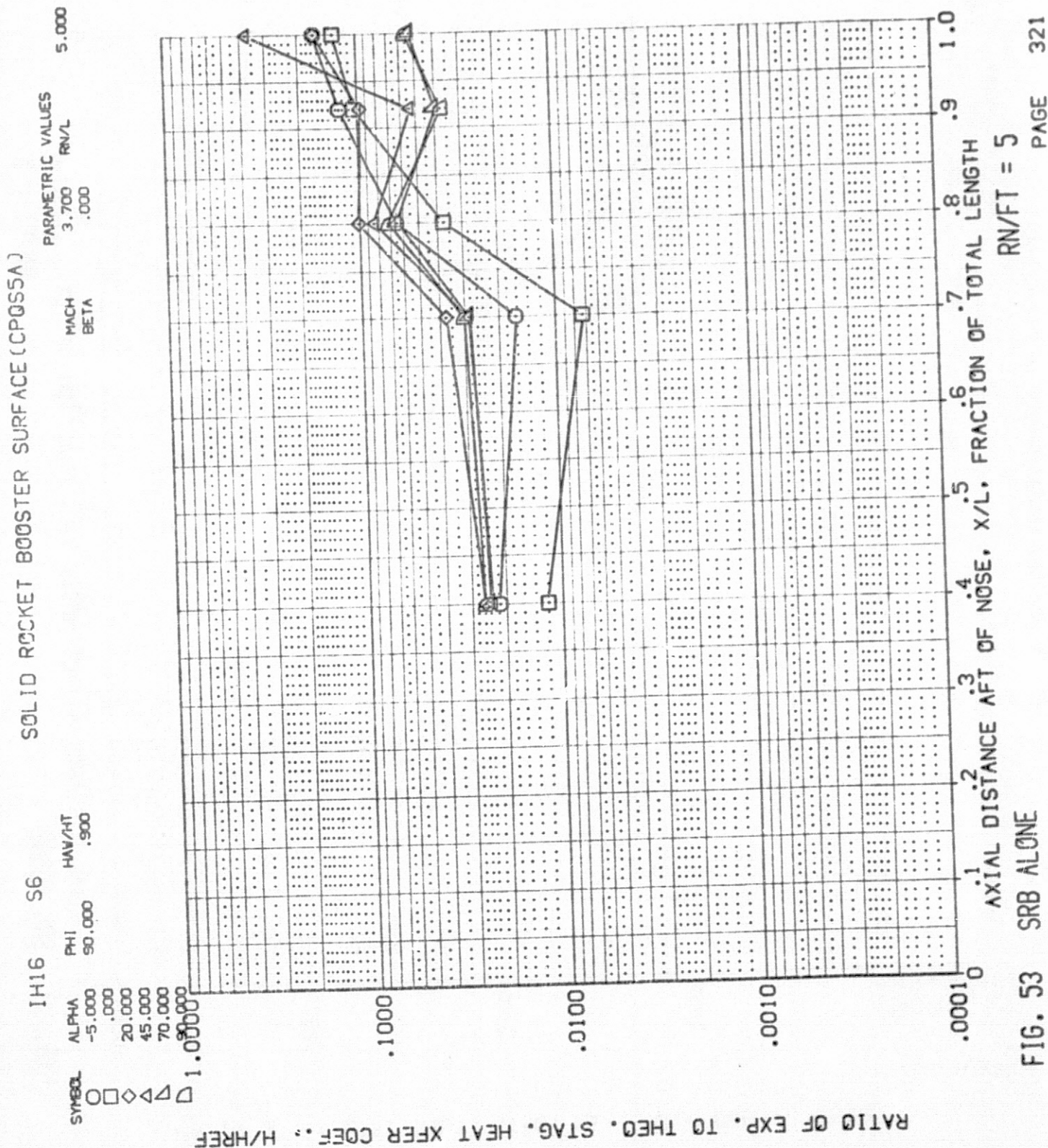
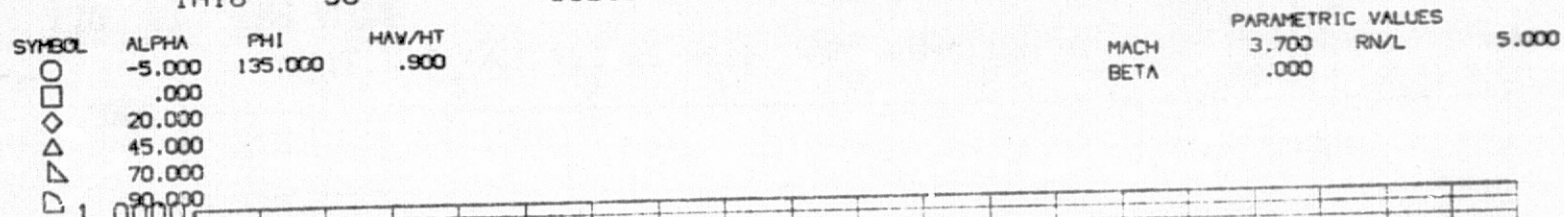


FIG. 53 SRB ALONE

IH16 S6

## SOLID ROCKET BOOSTER SURFACE (CPQS5A)



RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF. H/HREF

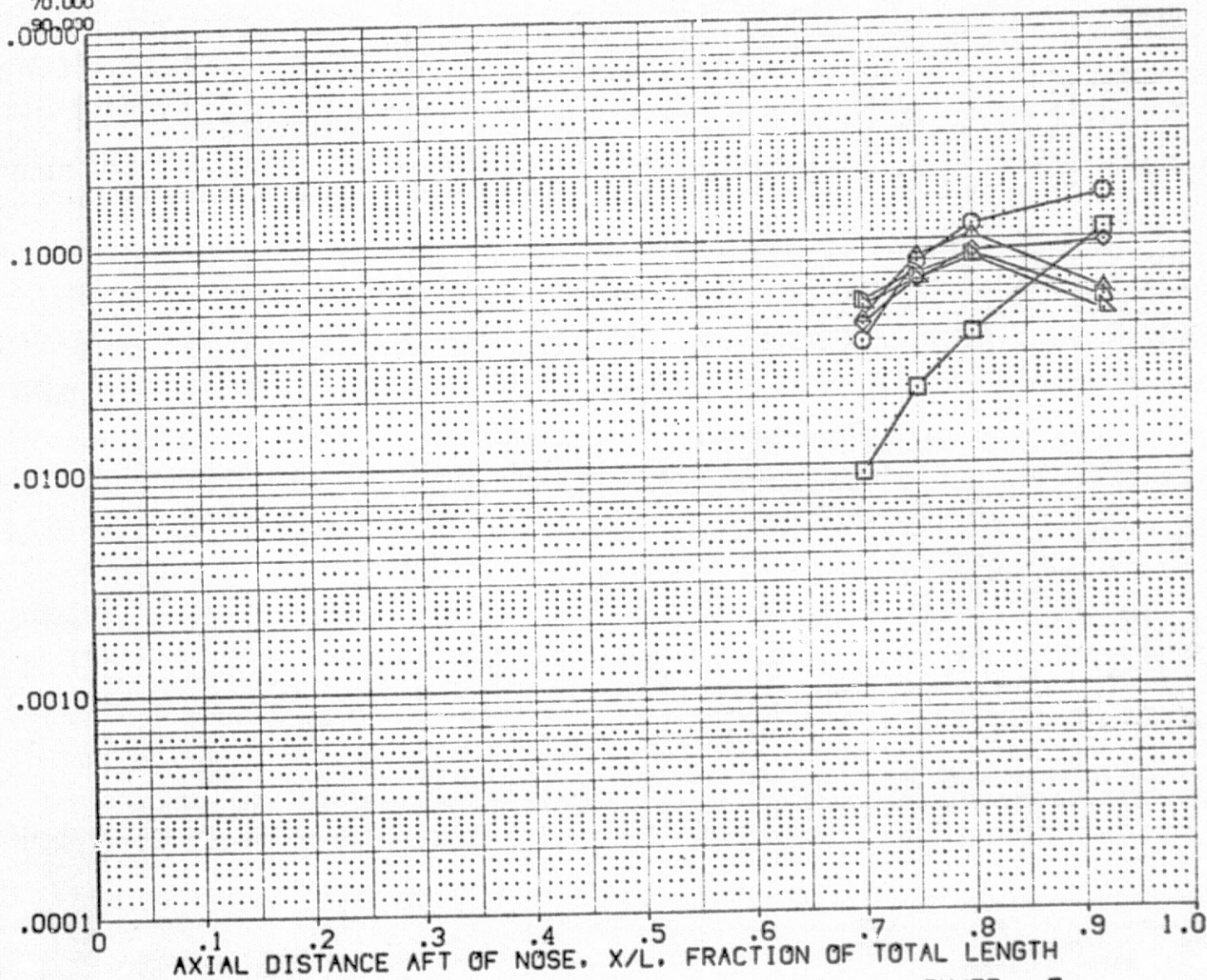


FIG. 53 SRB ALONE

RN/FT = 5



IH16

S6

## SOLID ROCKET BOOSTER SURFACE (CPQS5A)

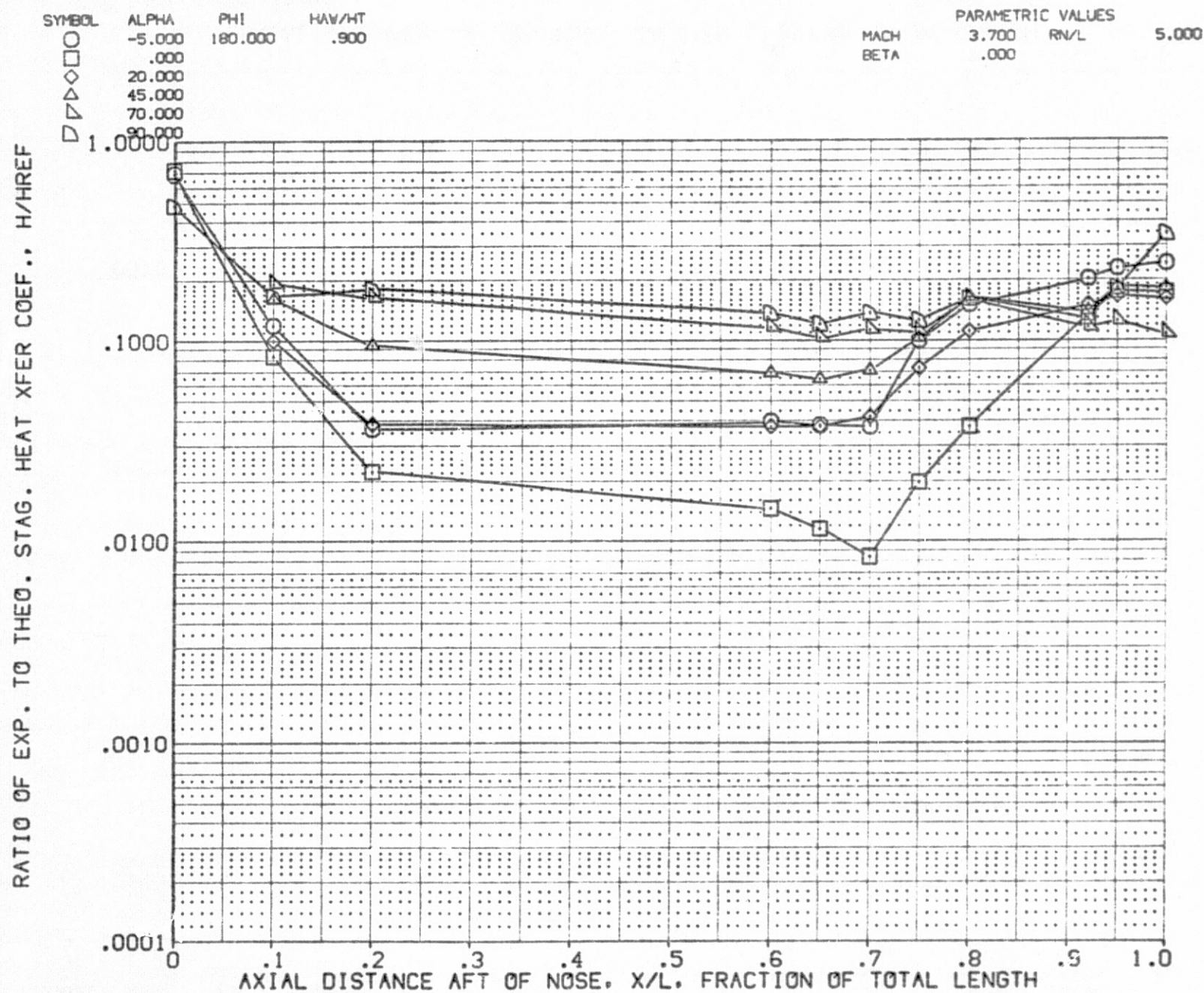


FIG. 53 SRB ALONE

RN/FT = 5

IH16

S6

## SOLID ROCKET BOOSTER SURFACE (CPQ55A)

SYMBOL	ALPHA	PHI	HAW/HT	MACH	BETA	PARAMETRIC VALUES	RN/L	5.000
○	-5.000	225.000	.900	3.700	.000			
◇	.000							
△	20.000							
▽	45.000							
◻	70.000							
◼	90.000							

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

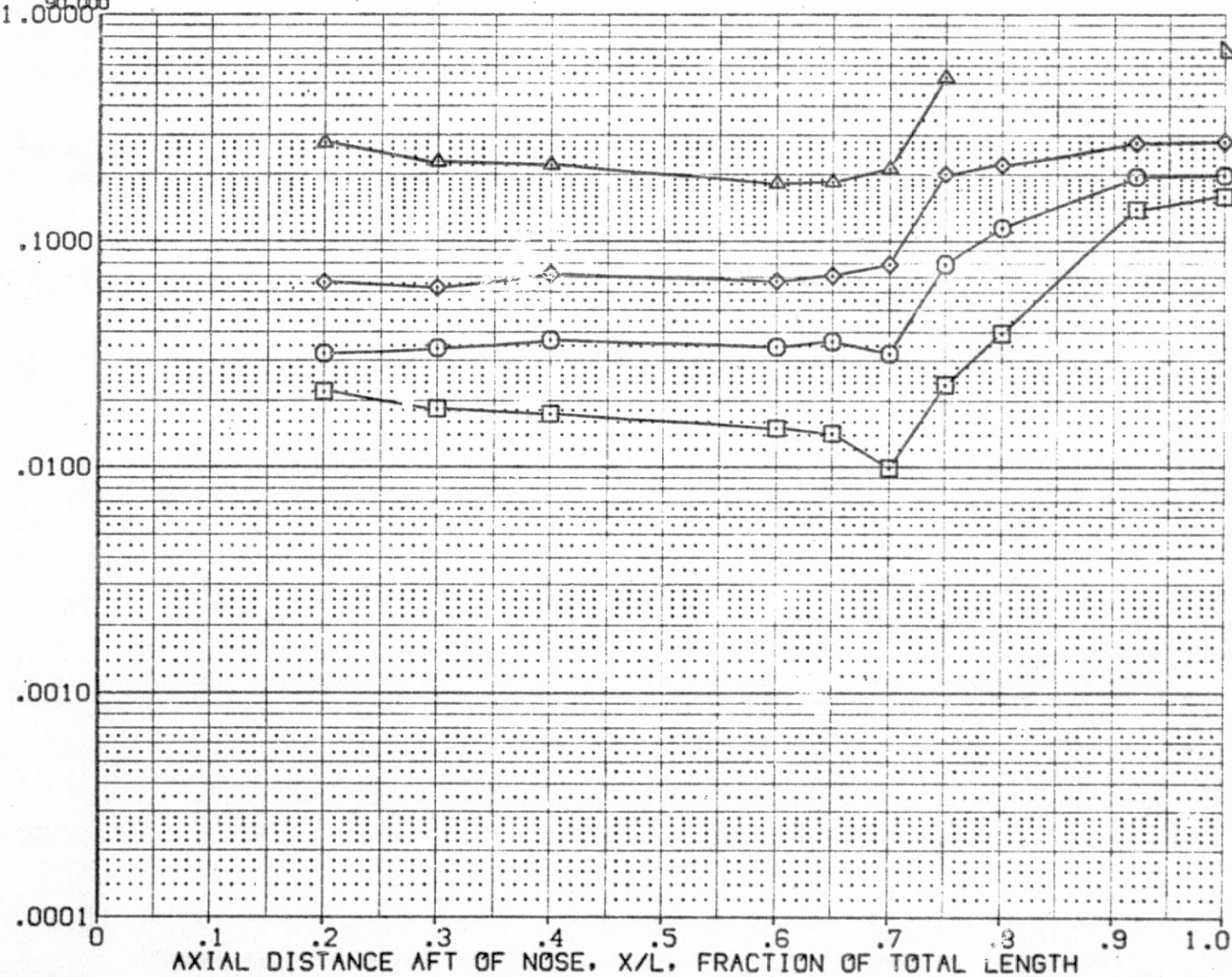


FIG. 53 SRB ALONE

RN/FT = 5



# SOLID ROCKET BOOSTER SURFACE (CPQ55A)

1416 S6

PARAMETRIC VALUES  
3.700 RN/L  
5.000

MACH  
BETA

HAV/HT  
.900

PHI  
270.000

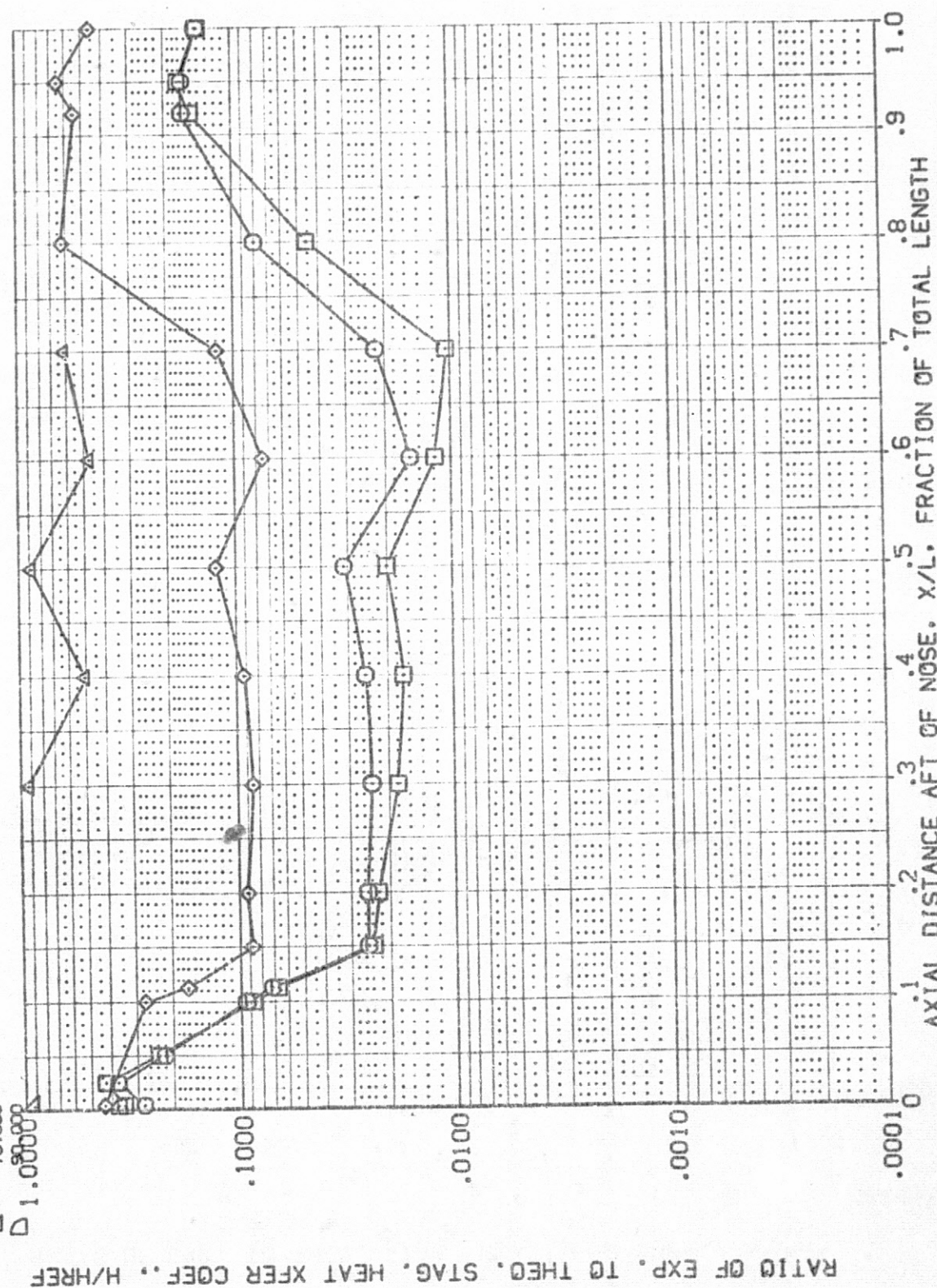
ALPHA  
-5.000

SYMBOL  
◇

◇

◇

◇



RATIO OF EXP. TO THEO. STAG. HEAT XFER COEFF., H/HREF

AXIAL DISTANCE AFT OF NOSE, X/L. FRACTION OF TOTAL LENGTH

RN/FT = 5

FIG. 53 SRB ALONE

# SOLID ROCKET BOOSTER SURFACE (CPQS5A)

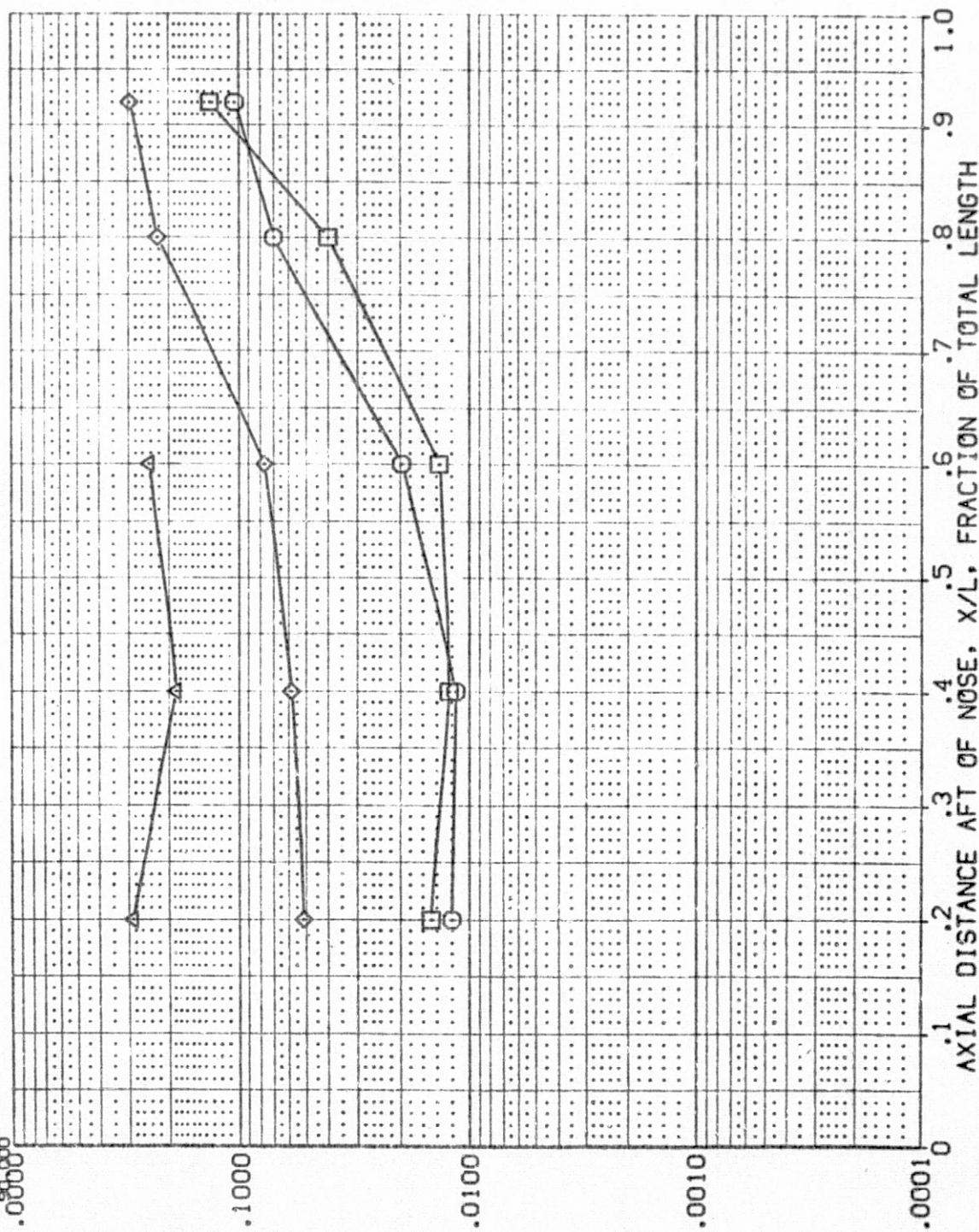
IH16 S6

PARAMETRIC VALUES  
MACH 3.700 RN/L 5.000  
BETA .000

ALPHA PHI HAW/HT  
-5.000 315.000 .900  
20.000  
45.000  
70.000

SYMBOL  
◇  
▽  
▽  
▽  
▽

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF



RN/FT = 5

FIG. 53 SRB ALONE



SYMBOL	PHI	HAW/HT	RN/L
○	90.000	.850	1.930
□	135.000		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
ALPHA	.000
DELTAH	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.: H/HREF

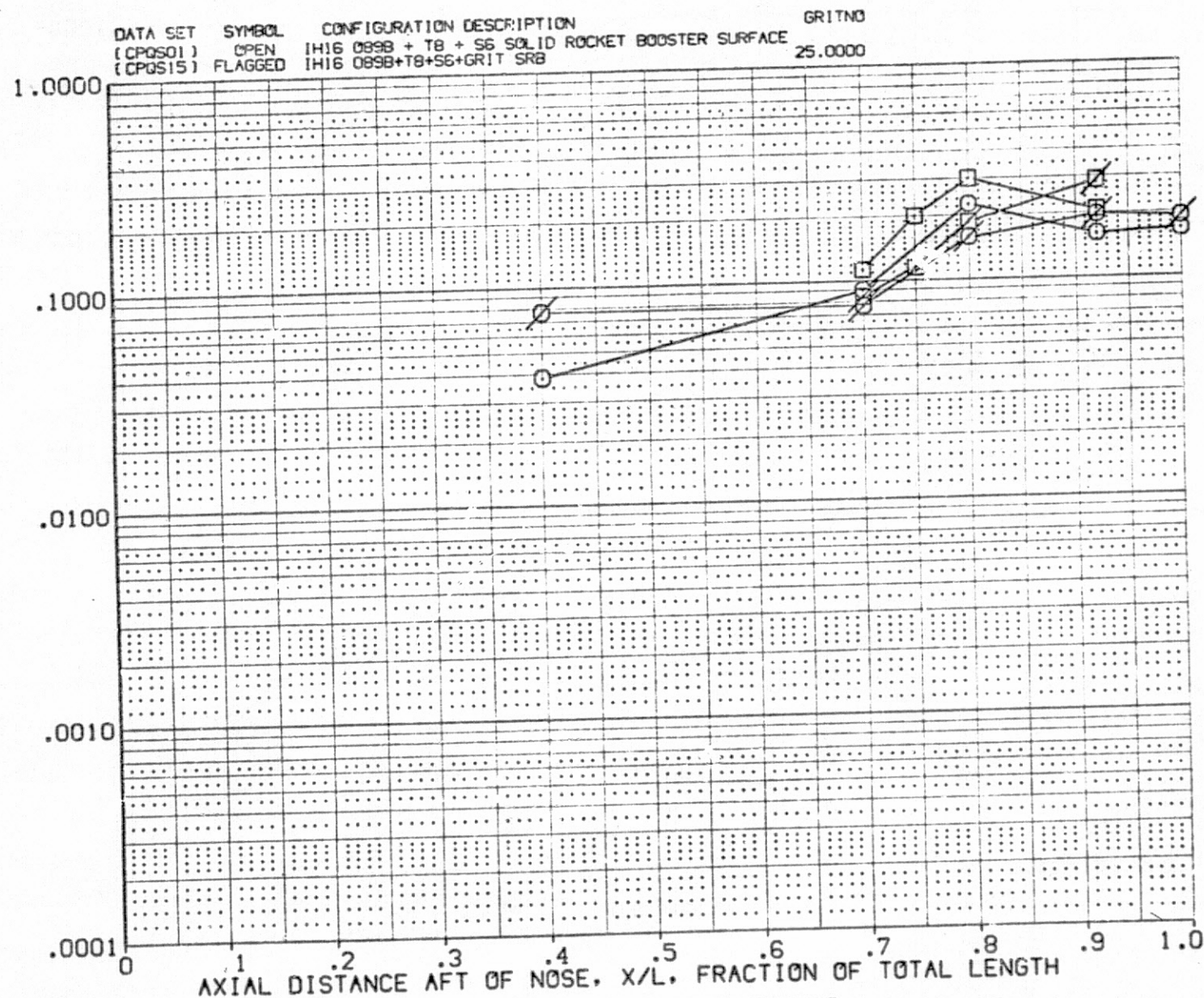


FIG. 54 INTEGRATED VEHICLE - SRB SURFACE GRIT EFFECT

SYMBOL	PHI	HAW/HT	RN/L
○	180.000	.850	1.930
□	225.000		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
ALPHA	.000
DELTAH	.175

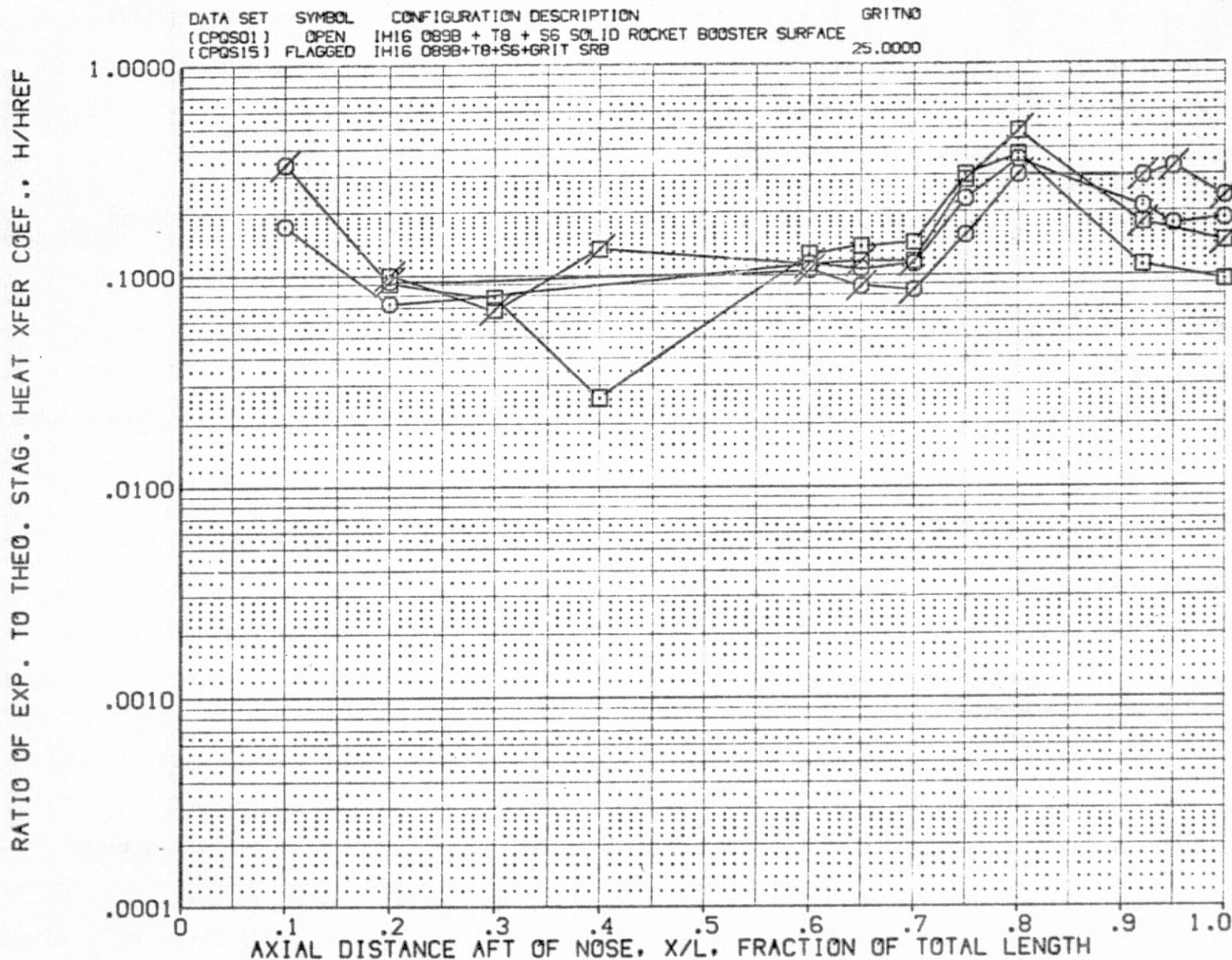


FIG. 54 INTEGRATED VEHICLE - SRB SURFACE GRIT EFFECT



SYMBOL	PHI	HAW/HT	RN/L
○	270.000	.850	1.930
□	315.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

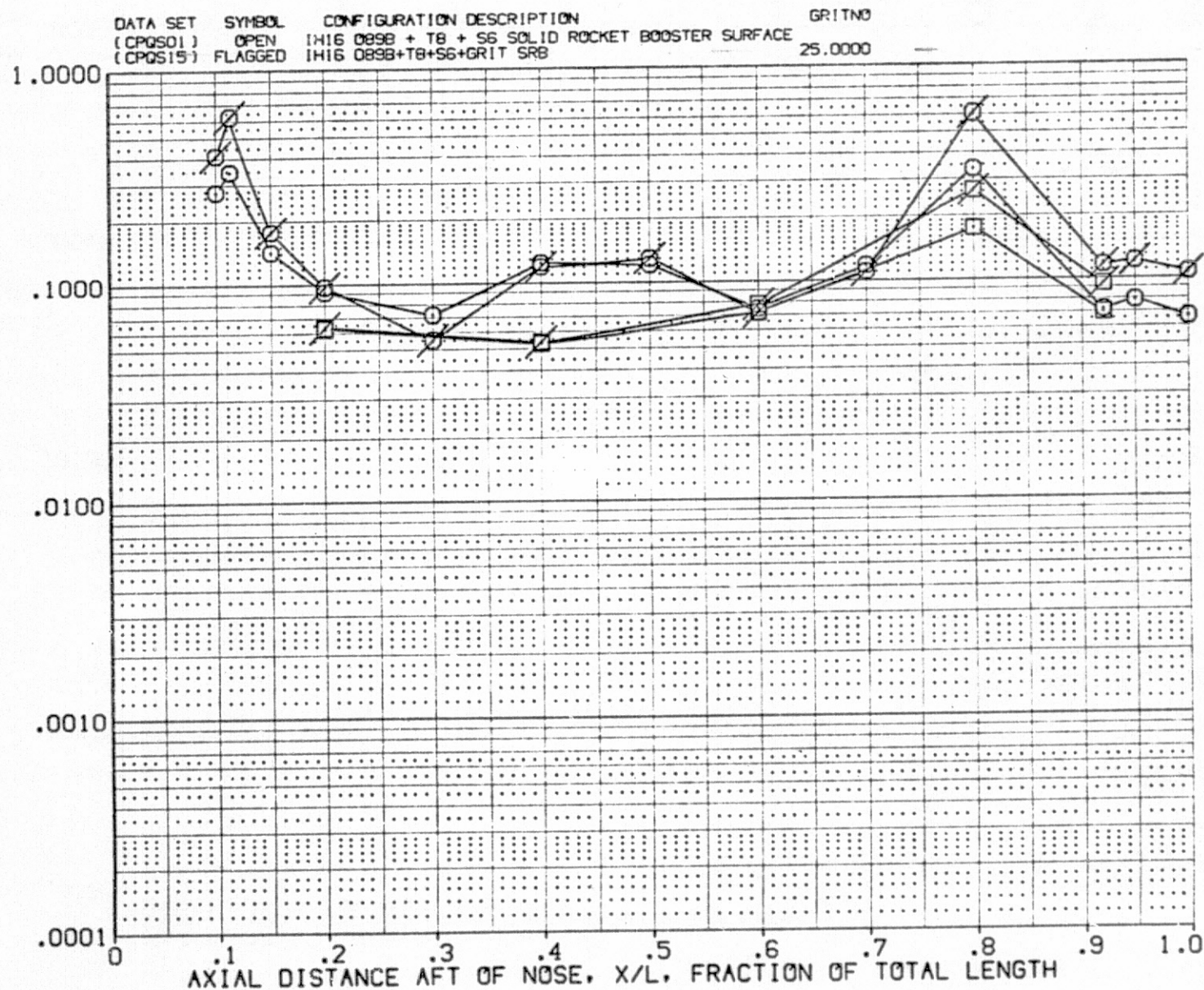


FIG. 54 INTEGRATED VEHICLE - SRB SURFACE GRIT EFFECT

SYMBOL	PHI	HAV/HT	RN/L
○	90.000	.900	1.930
□	135.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTA	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

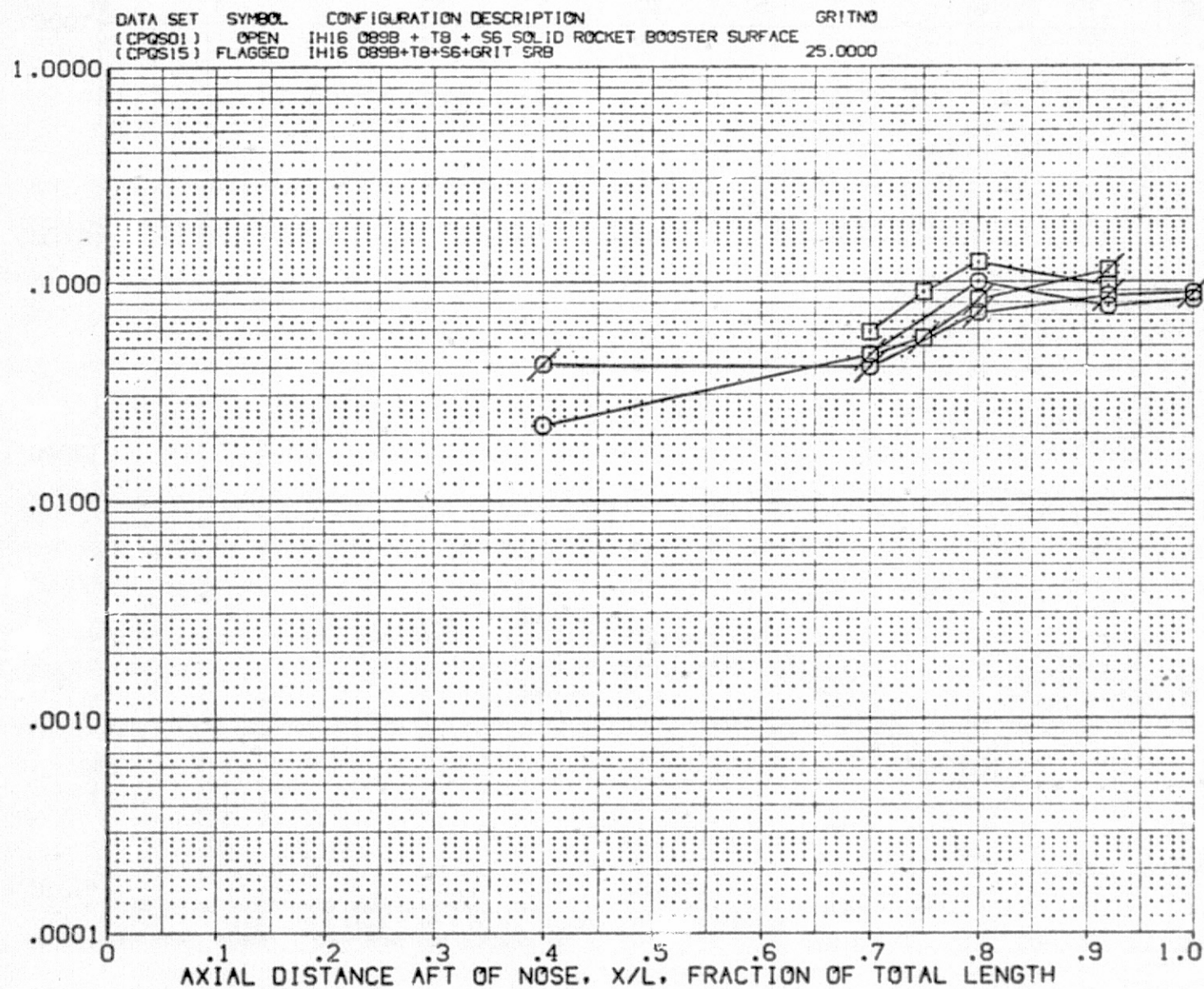


FIG. 54 INTEGRATED VEHICLE - SRB SURFACE GRIT EFFECT



SYMBOL	PHI	HAV/HT	RN/L
○	180.000	.900	1.930
□	225.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

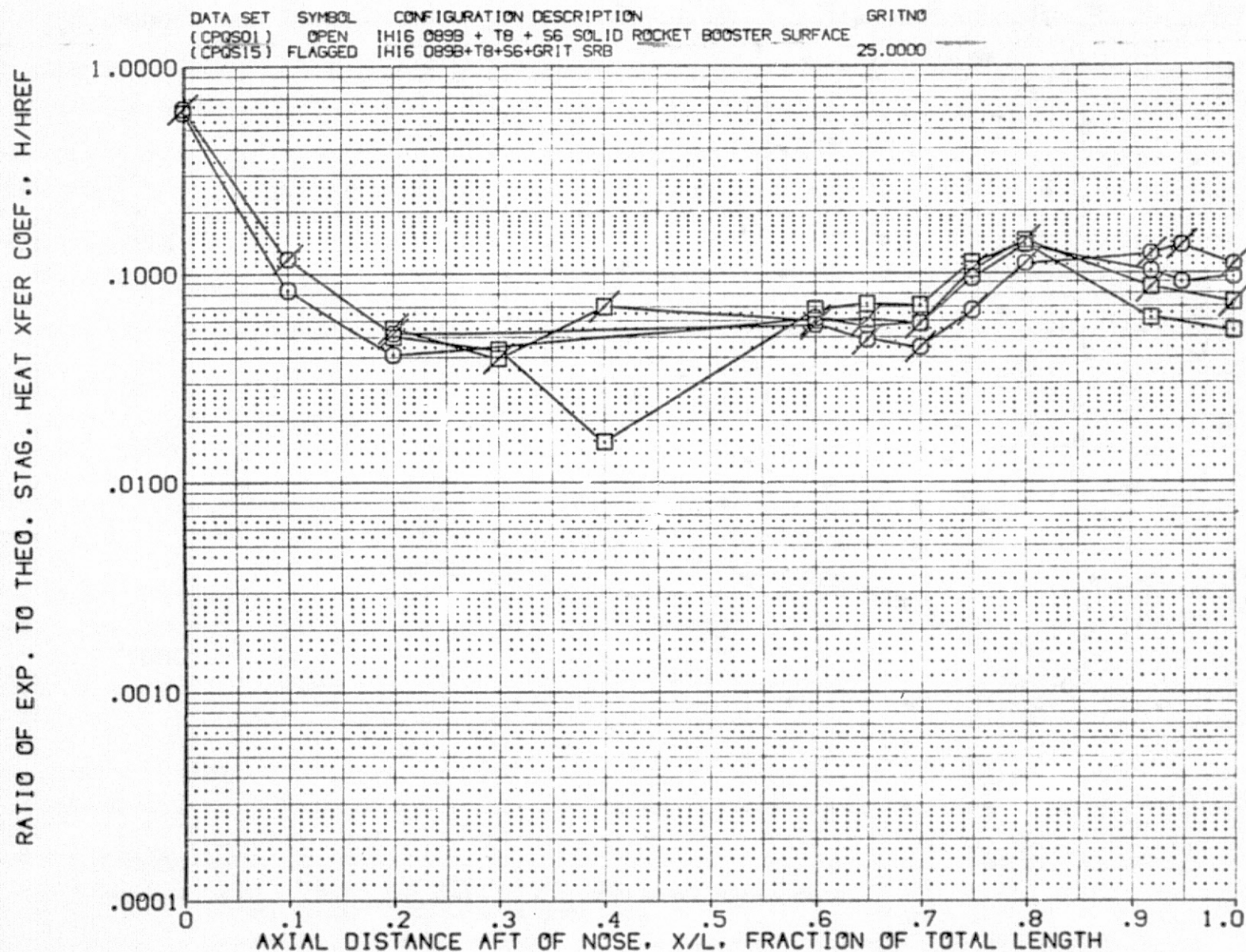


FIG. 54 INTEGRATED VEHICLE - SRB SURFACE GRIT EFFECT

SYMBOL	PHI	HAW/HT	RN/L
○	270.000	.900	1.930
□	315.000		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
ALPHA	.000
DELTAH	.175

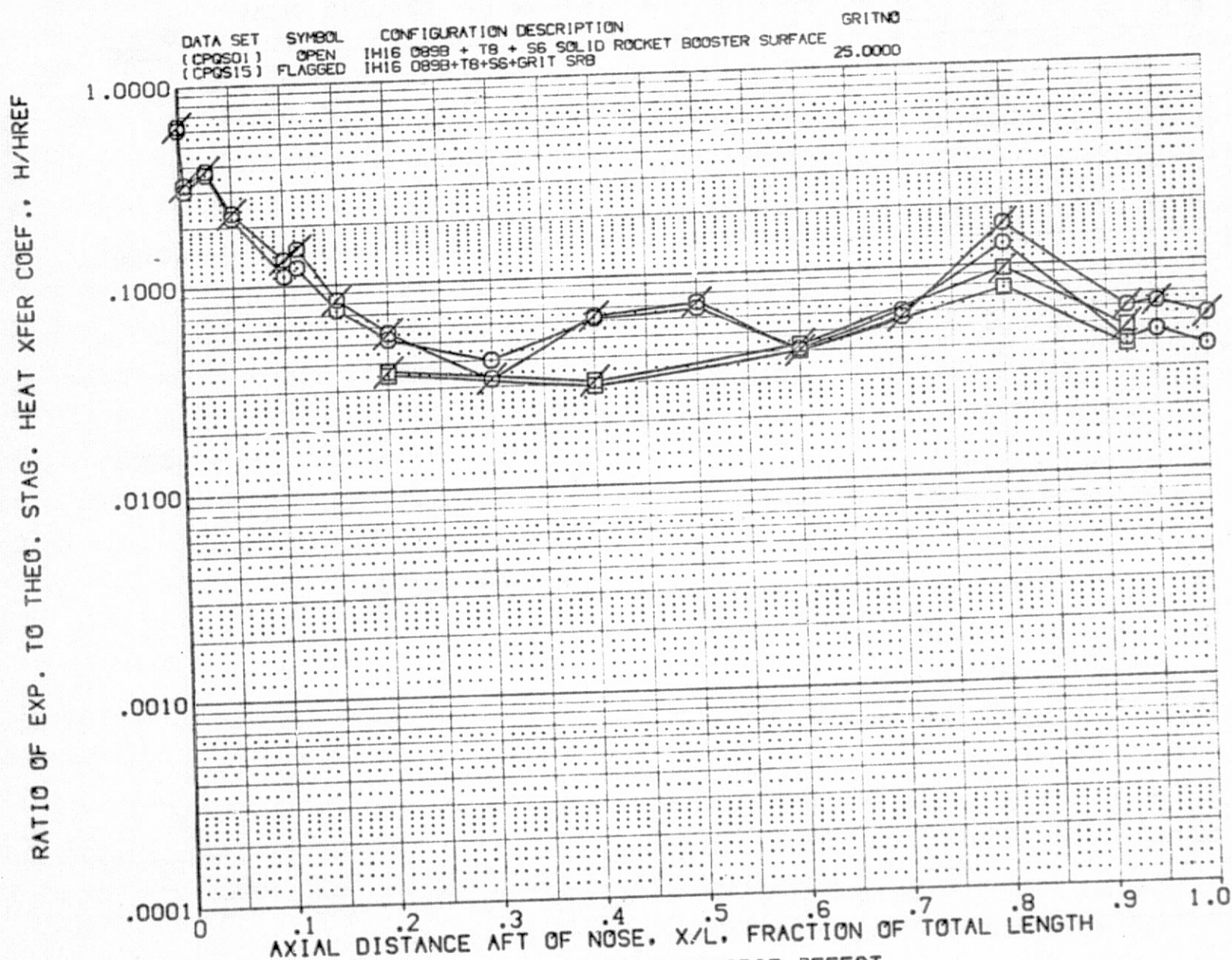


FIG. 54 INTEGRATED VEHICLE - SRB SURFACE GRIT EFFECT



SYMBOL	PHI	HAW/HT	RN/L
○	90.000	1.000	1.930
□	135.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

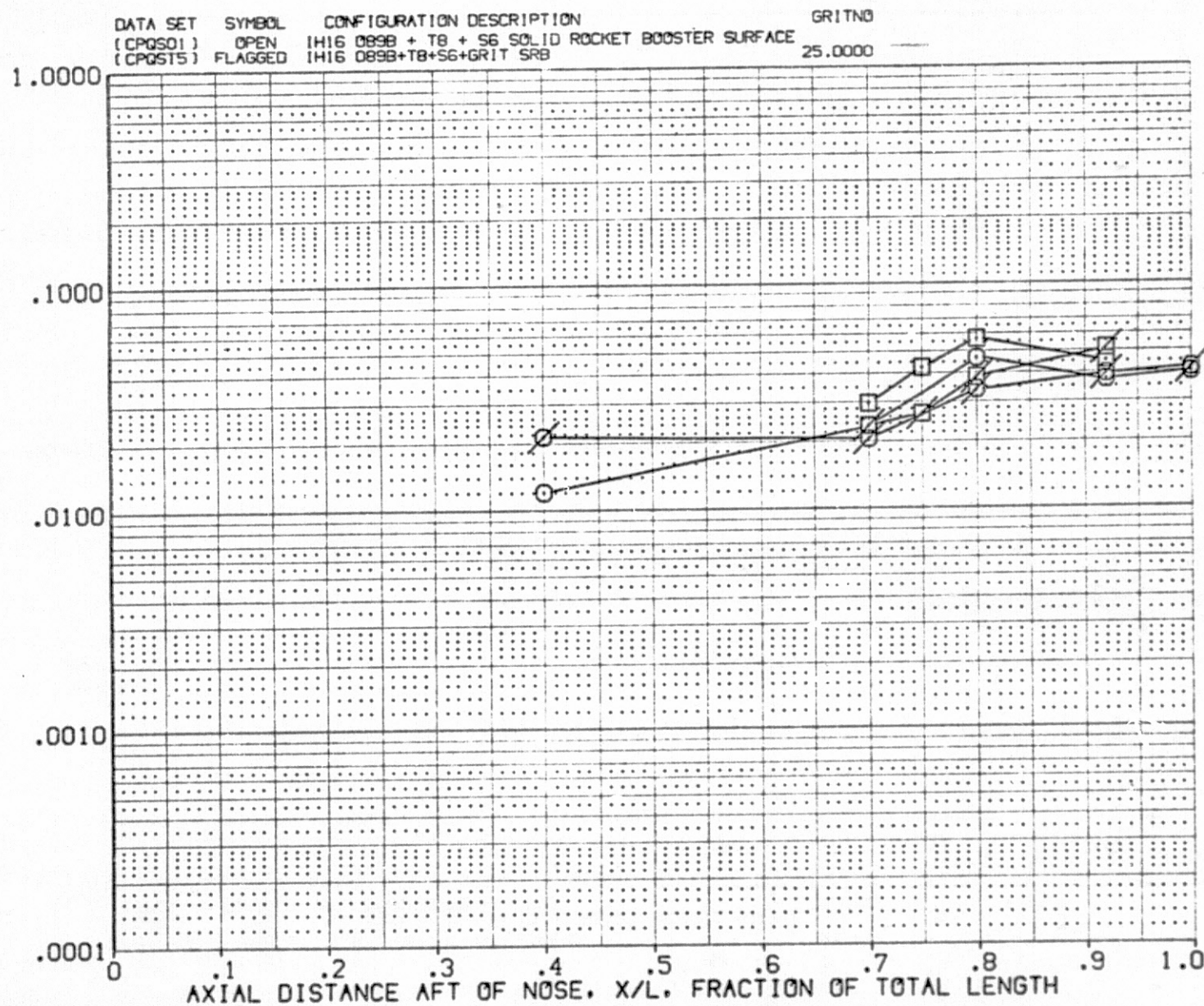


FIG. 54 INTEGRATED VEHICLE - SRB SURFACE GRIT EFFECT

SYMBOL	PHI	HAW/HT	RN/L
○	180.000	1.000	1.930
□	225.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTA	.175



FIG. 54 INTEGRATED VEHICLE - SRB SURFACE GRIT EFFECT



SYMBOL	PHI	HAW/HT	RN/L
○	270.000	1.000	1.930
□	315.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $\dot{q}/HREF$

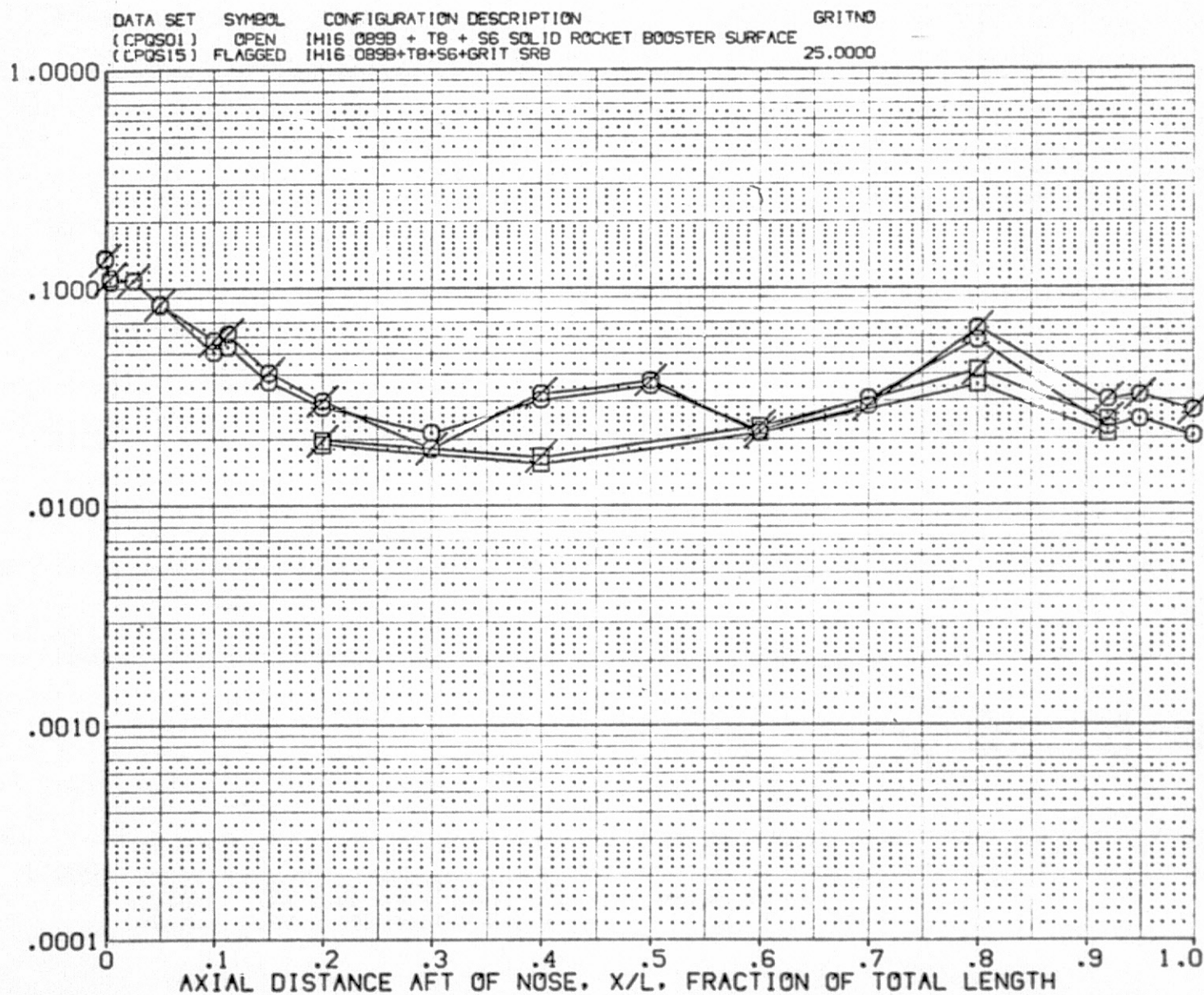


FIG. 54 INTEGRATED VEHICLE - SRB SURFACE GRIT EFFECT

SYMBOL PHI HAV/HT RN/L  
 O 90.000 .850 4.570  
 □ 135.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000 DELTAH .175

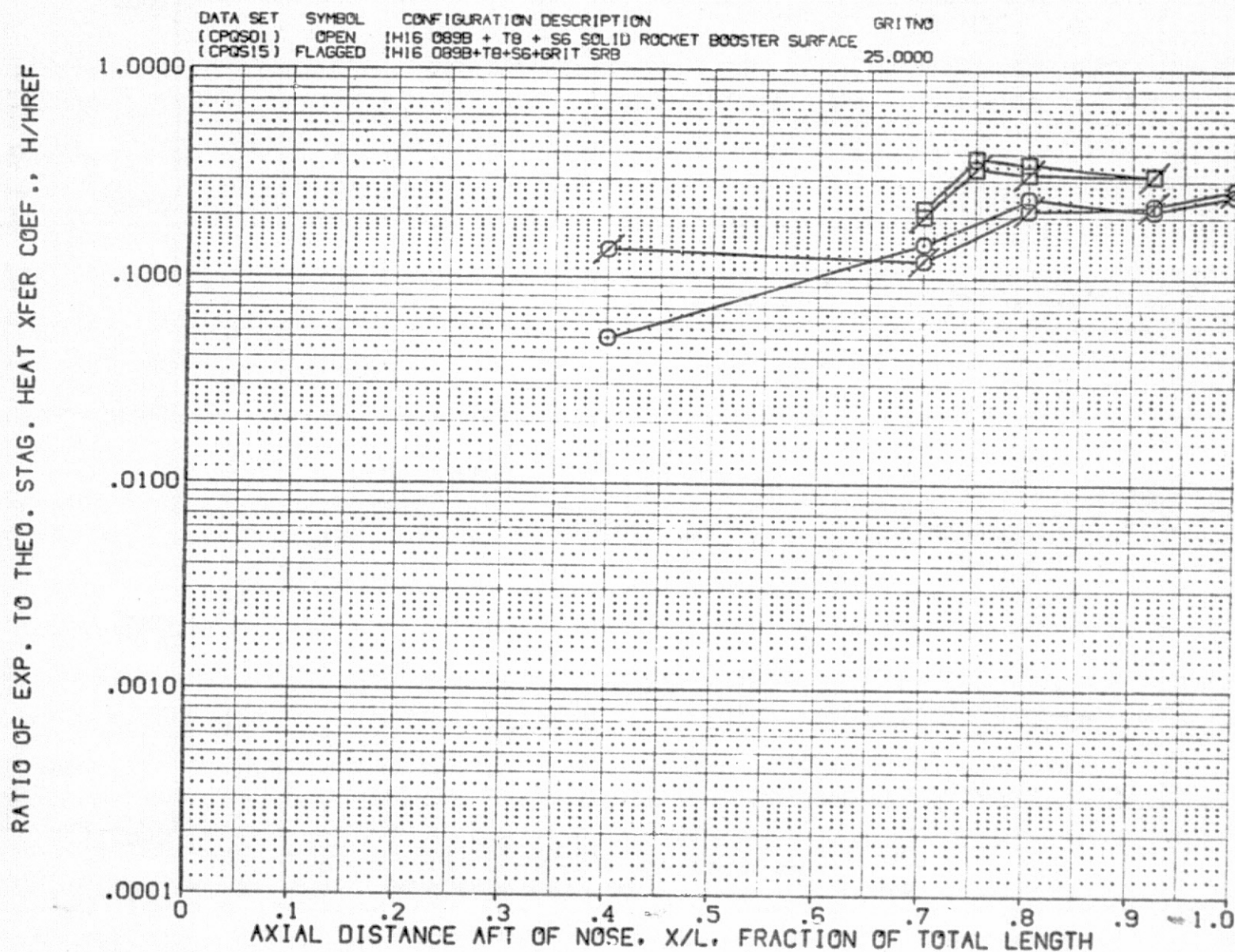


FIG. 54 INTEGRATED VEHICLE - SRB SURFACE GRIT EFFECT



SYMBOL	PHI	HAW/HT	RN/L
○	180.000	.850	4.570
□	225.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

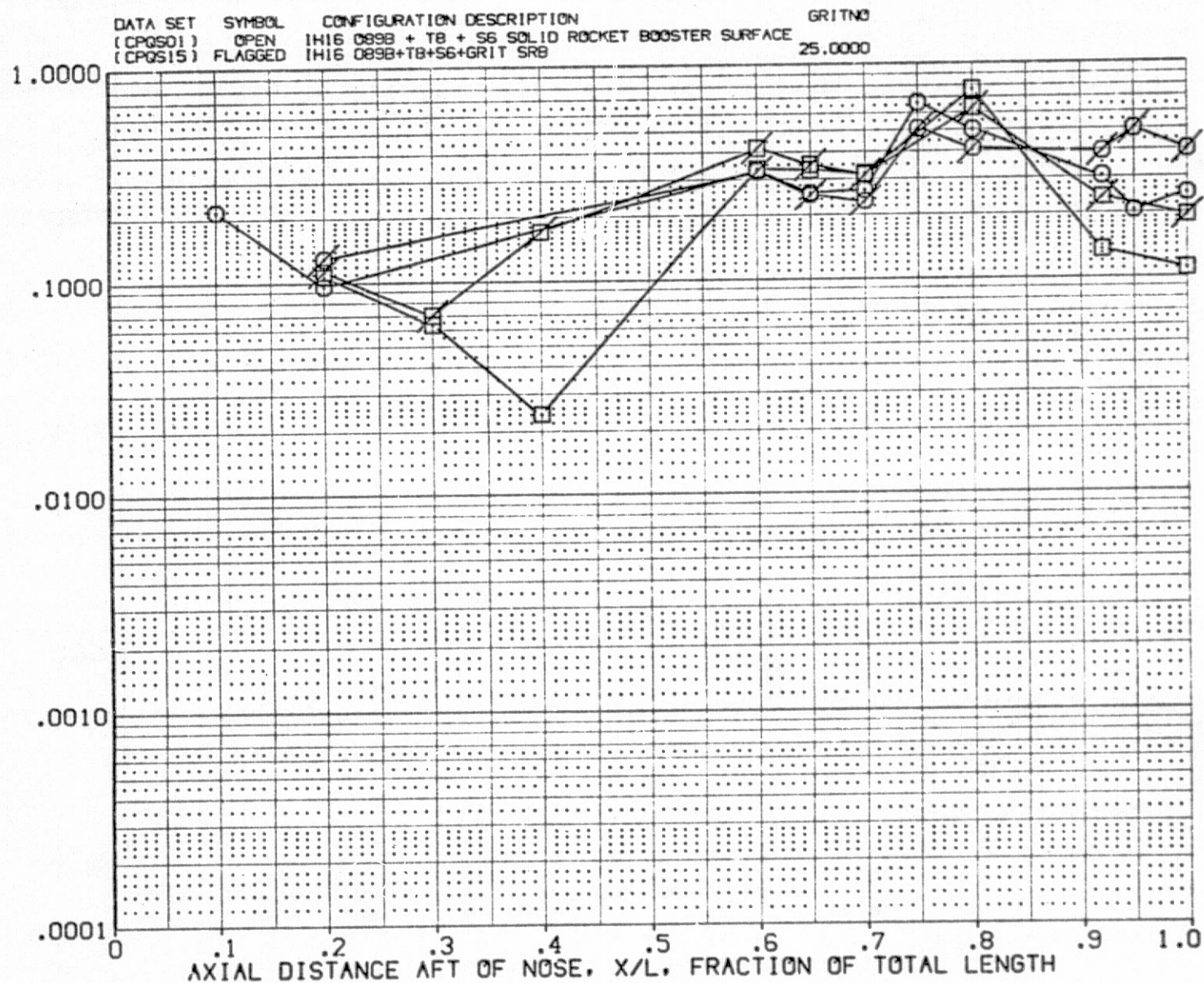


FIG. 54 INTEGRATED VEHICLE - SRB SURFACE GRIT EFFECT

SYMBOL PHI HAW/HT RN/L  
 ○ 270.000 .850 4.570  
 □ 315.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000 DELTAH .175

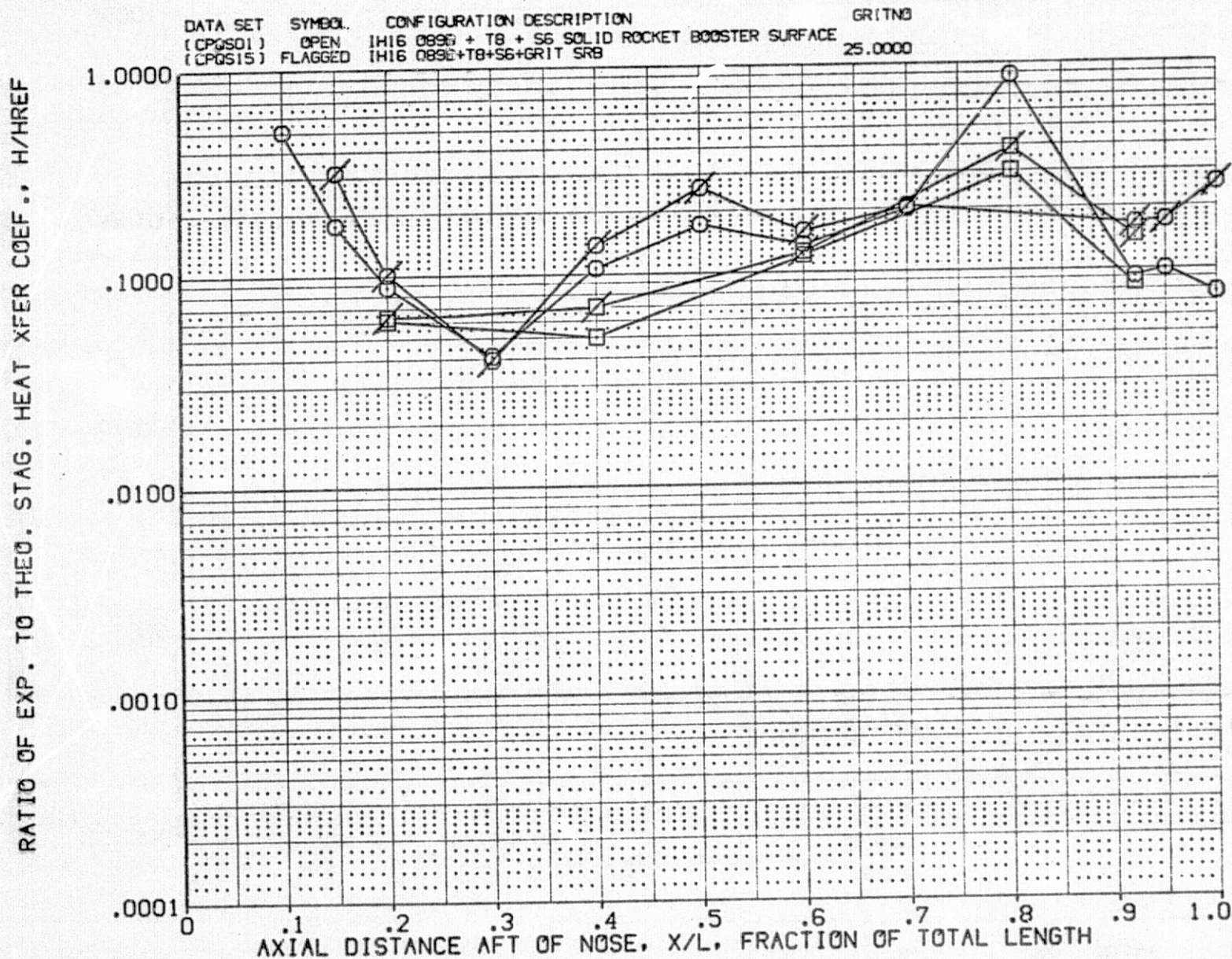


FIG. 54 INTEGRATED VEHICLE - SRB SURFACE GRIT EFFECT



SYMBOL	PHI	HAW/HT	RN/L
○	90.000	.900	4.570
□	135.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

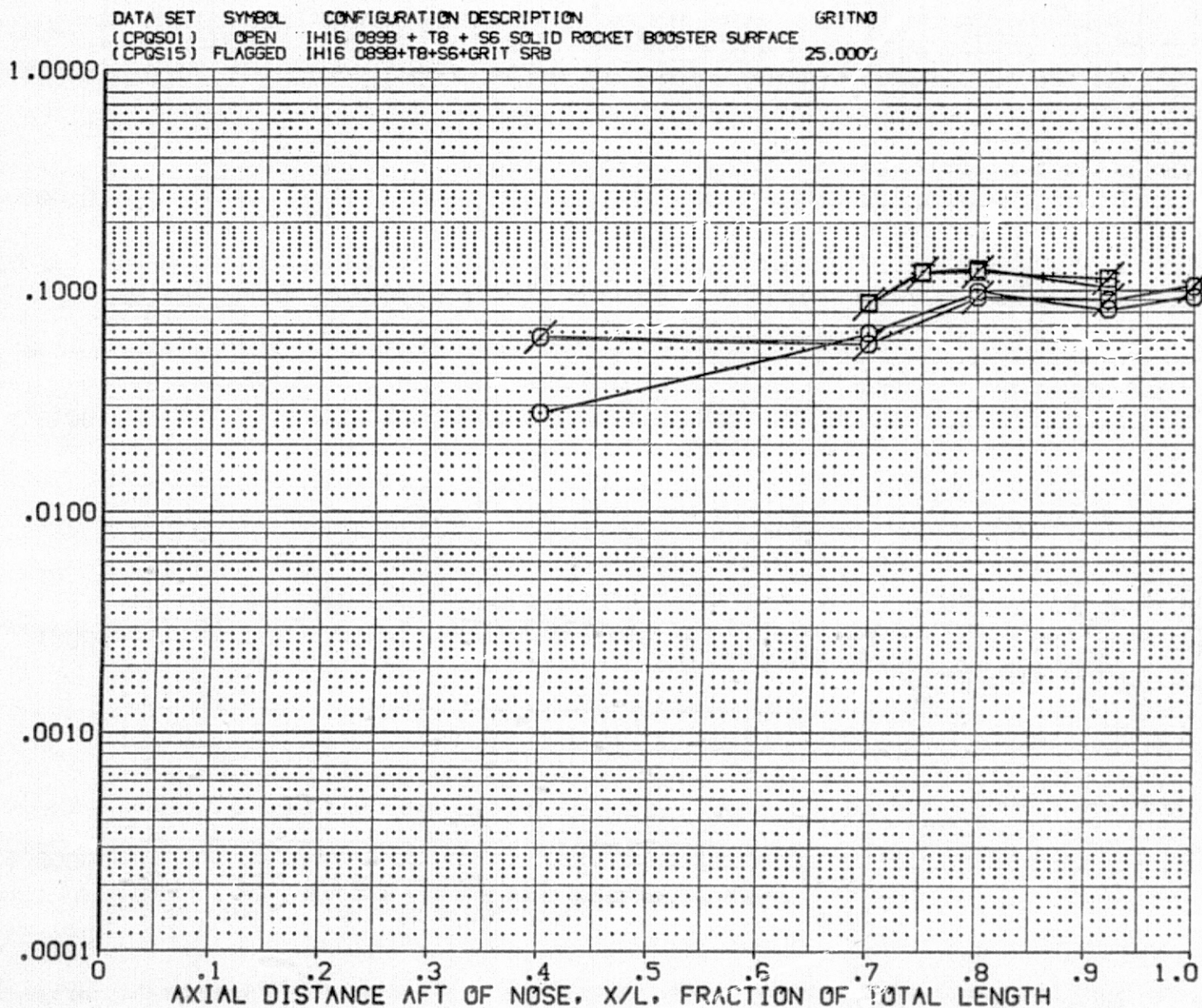


FIG. 54 INTEGRATED VEHICLE - SRB SURFACE GRIT EFFECT

SYMBOL	PHI	HAW/HT	RN/L
○	180.000	.900	4.570
□	225.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTA	.175

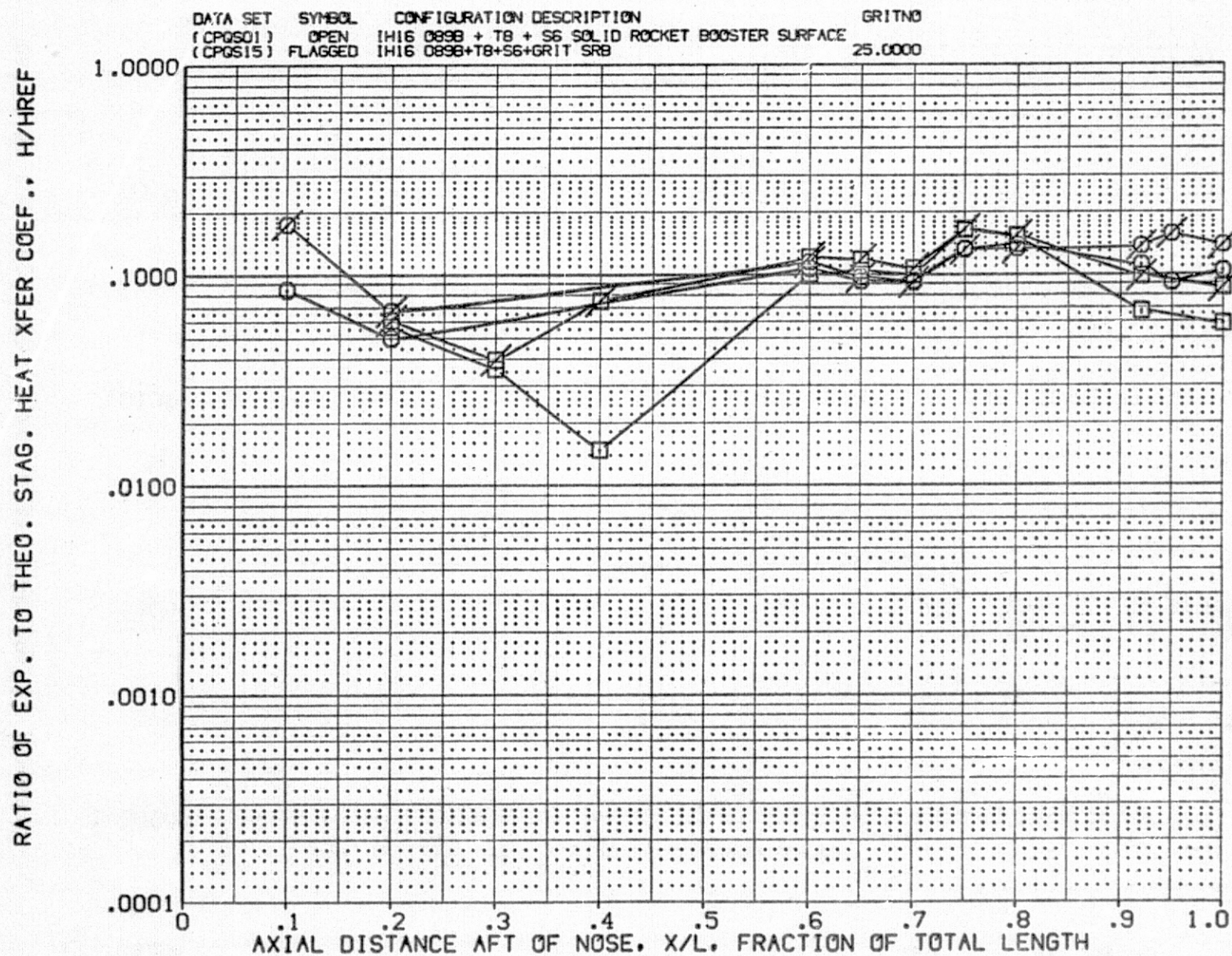


FIG. 54 INTEGRATED VEHICLE - SRB SURFACE GRIT EFFECT



SYMBOL	PHI	HAW/HT	RN/L
○	270.000	.900	4.570
□	315.000		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTA	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

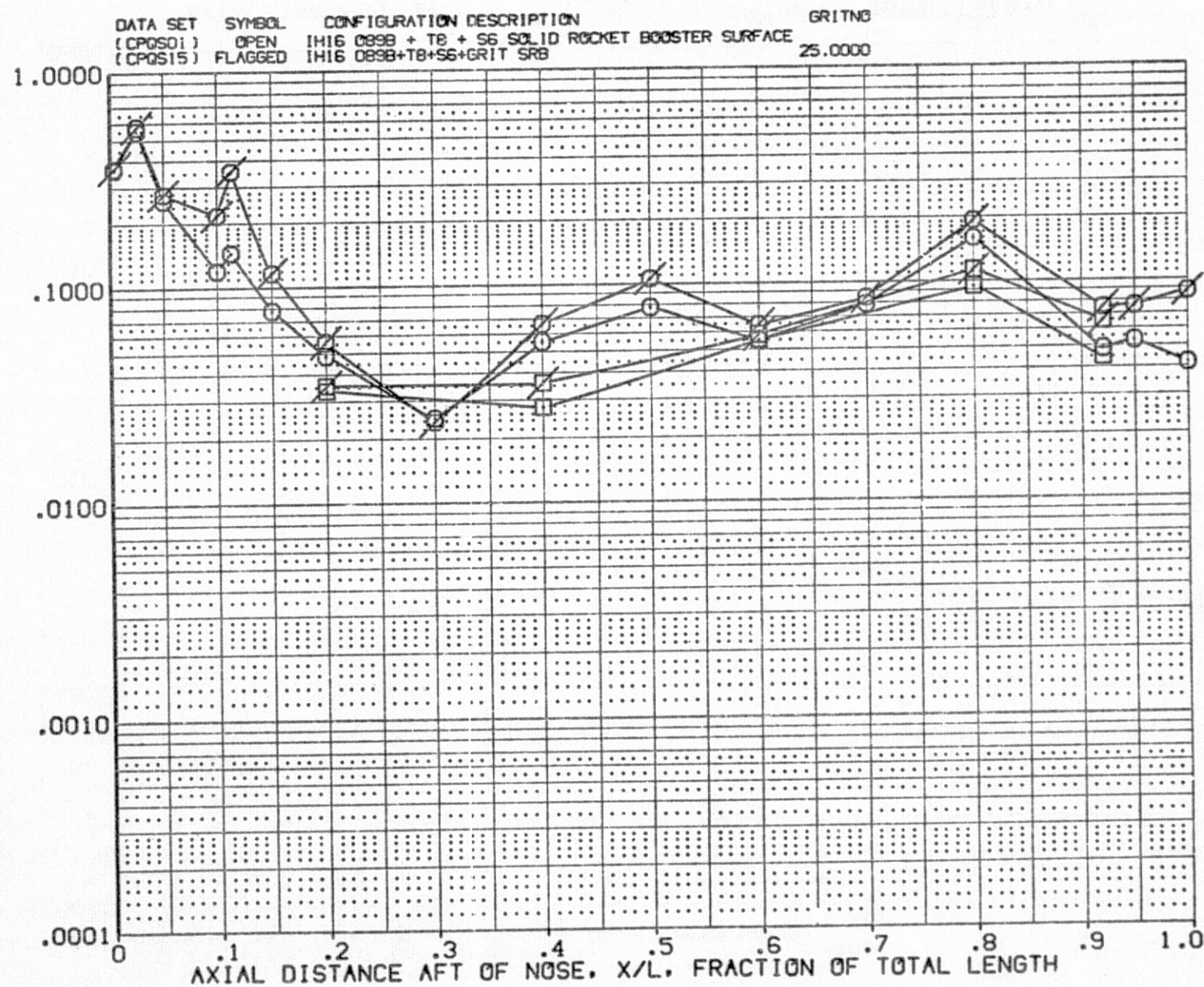


FIG. 54 INTEGRATED VEHICLE - SRB SURFACE GRIT EFFECT

SYMBOL PHI HAV/HT RN/L  
 ○ 90.000 1.000 4.570  
 □ 135.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000 DELTAH .175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $H/H_{REF}$

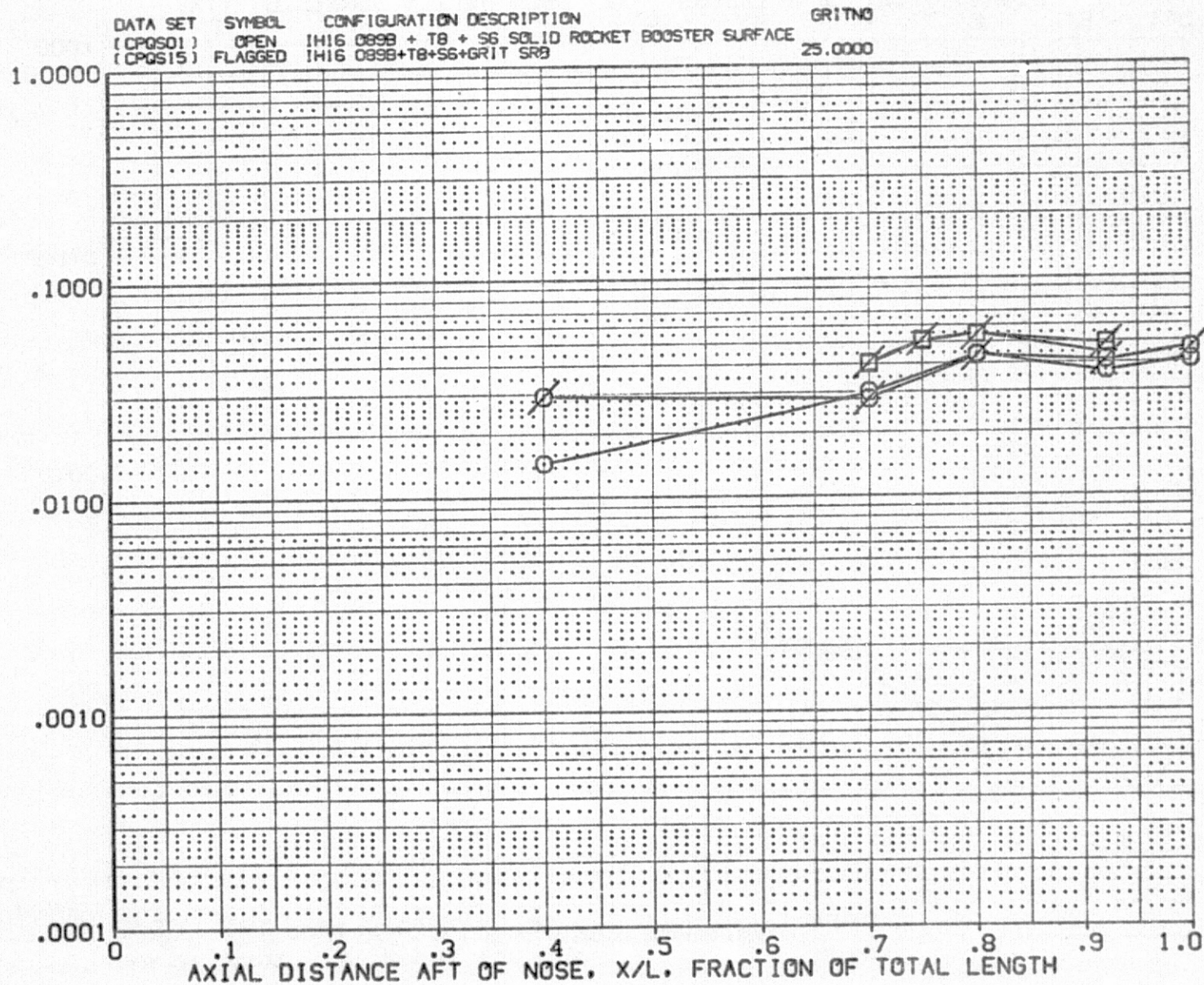


FIG. 54 INTEGRATED VEHICLE - SRB SURFACE GRIT EFFECT



SYMBOL	PHI	HAW/HT	RN/L
○	180.000	1.000	4.570
□	225.000		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
ALPHA	.000
DELTAH	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

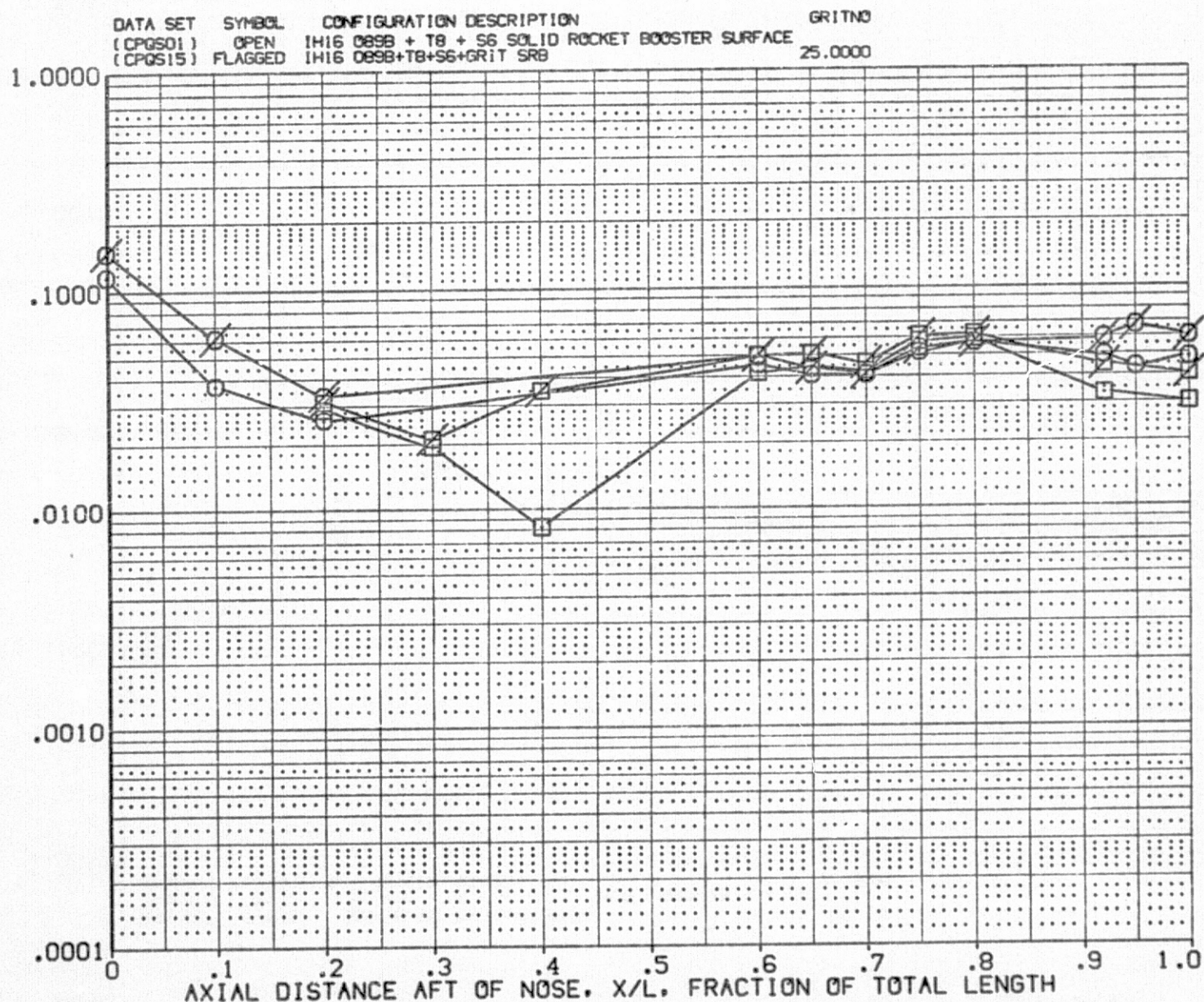


FIG. 54 INTEGRATED VEHICLE - SRB SURFACE GRIT EFFECT

SYMBOL	PHI	HAW/HT	RN/L
○	270.000	1.000	4.570
□	315.000		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
ALPHA	.000
DELTAH	.175

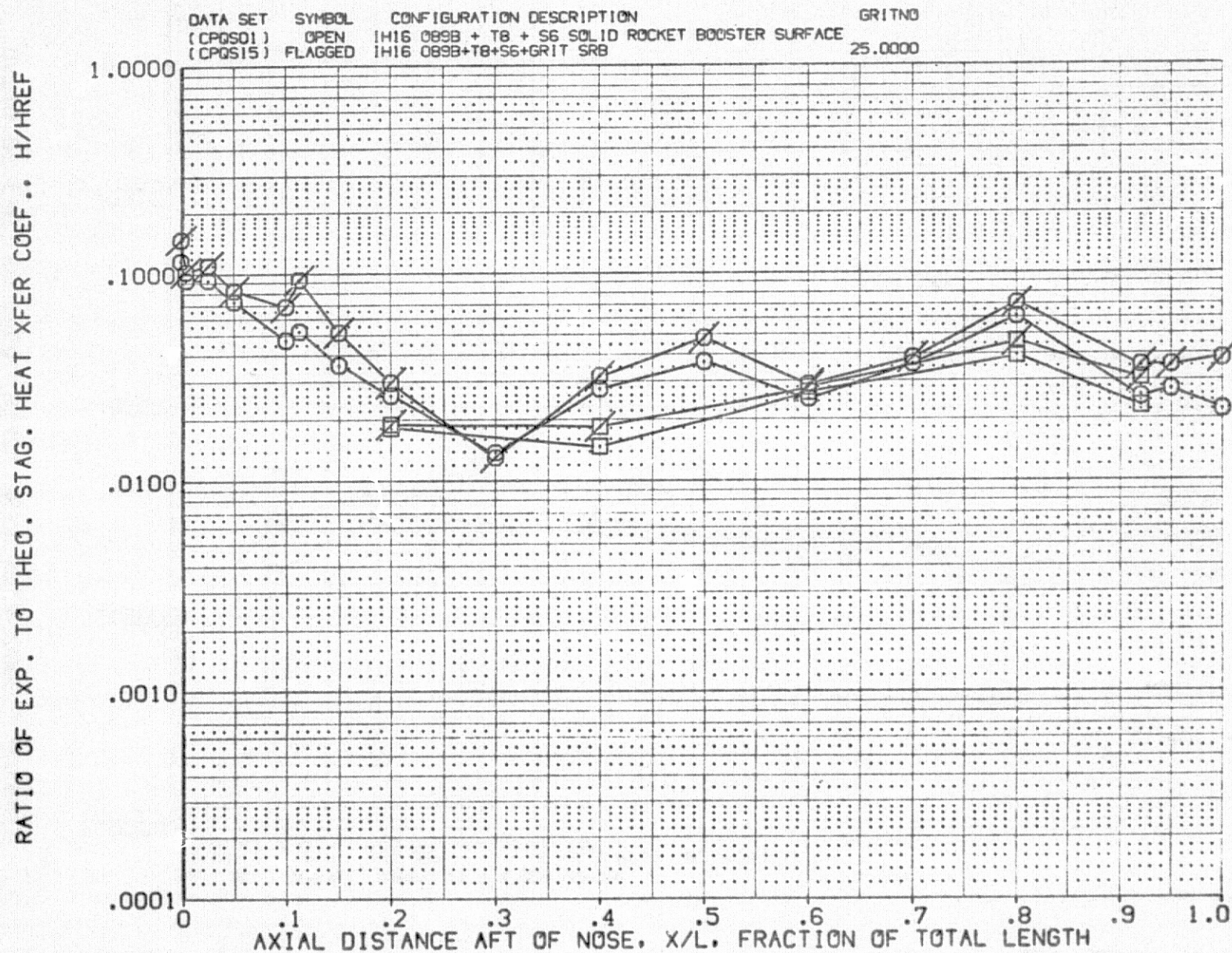


FIG. 54 INTEGRATED VEHICLE - SRB SURFACE GRIT EFFECT



SYMBOL PHI HAW/HT RN/L  
 ○ 90.000 .850 1.930  
 □ 135.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

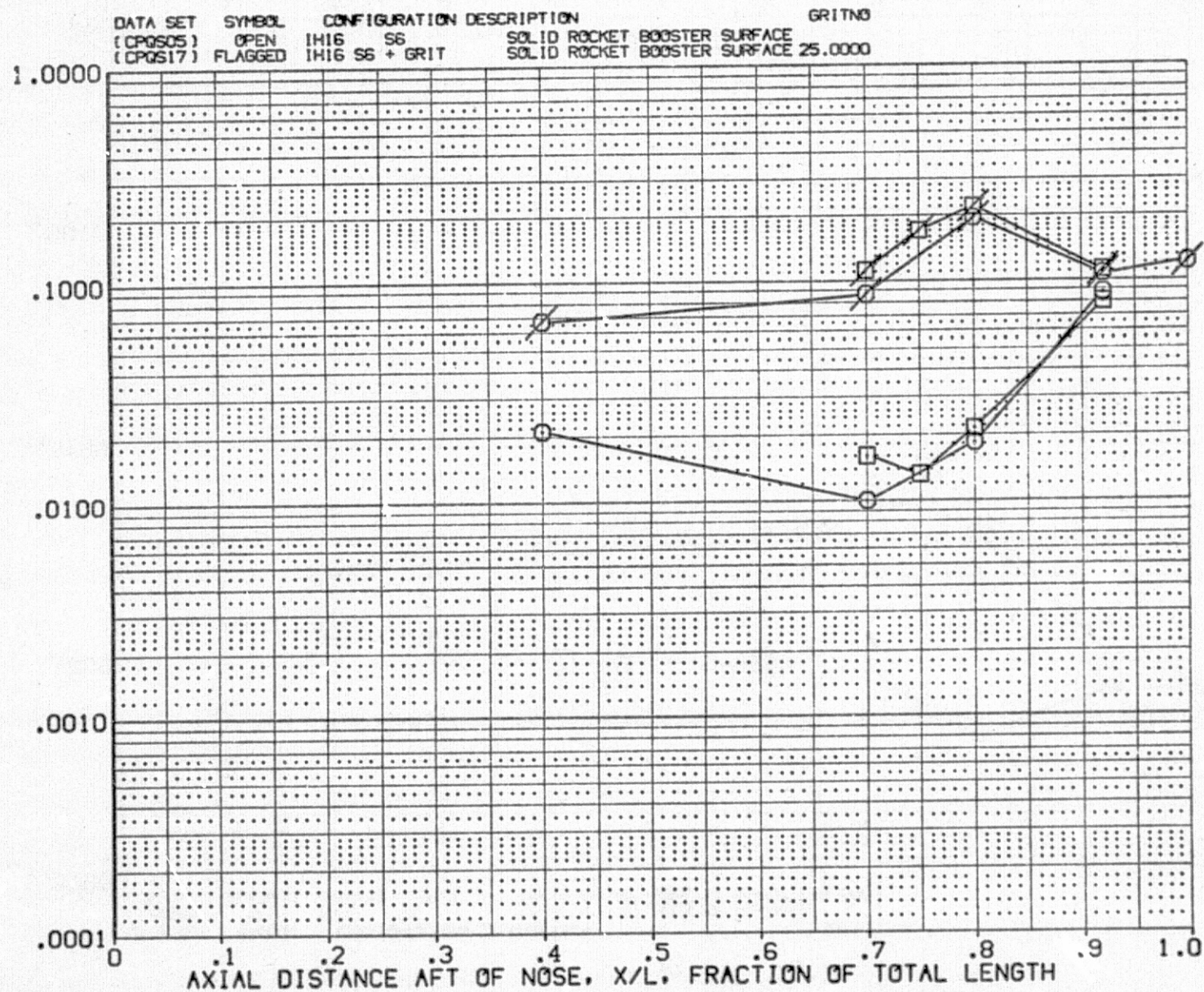


FIG. 55 SRB ALONE

GRIT EFFECT

SYMBOL PHI HAW/HT RN/L  
 ○ 180.000 .850 1.930  
 □ 225.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

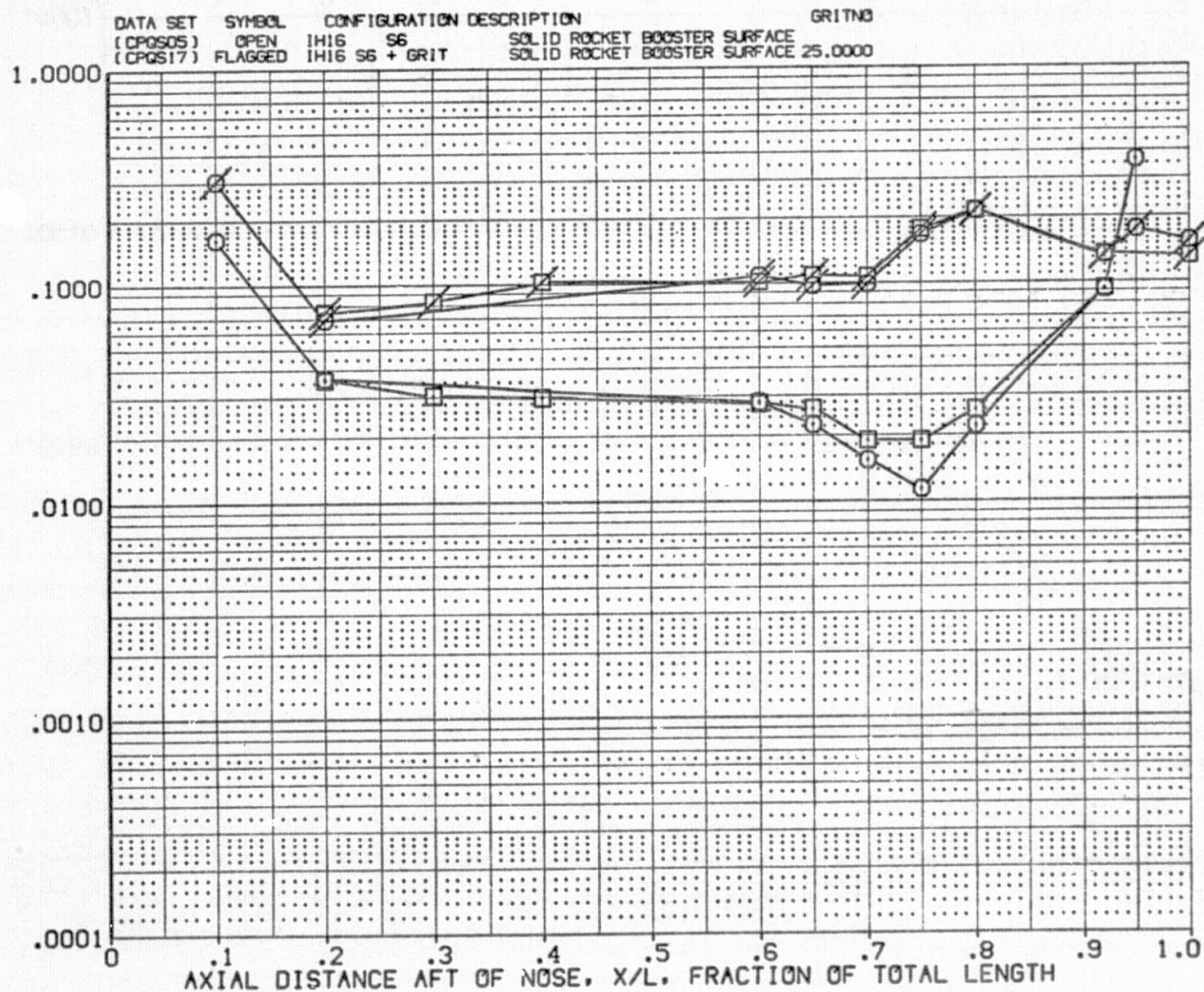


FIG. 55 SRB ALONE

GRIT EFFECT



SYMBOL PHI HAV/HT RN/L  
 ○ 270.000 .850 1.930  
 □ 315.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

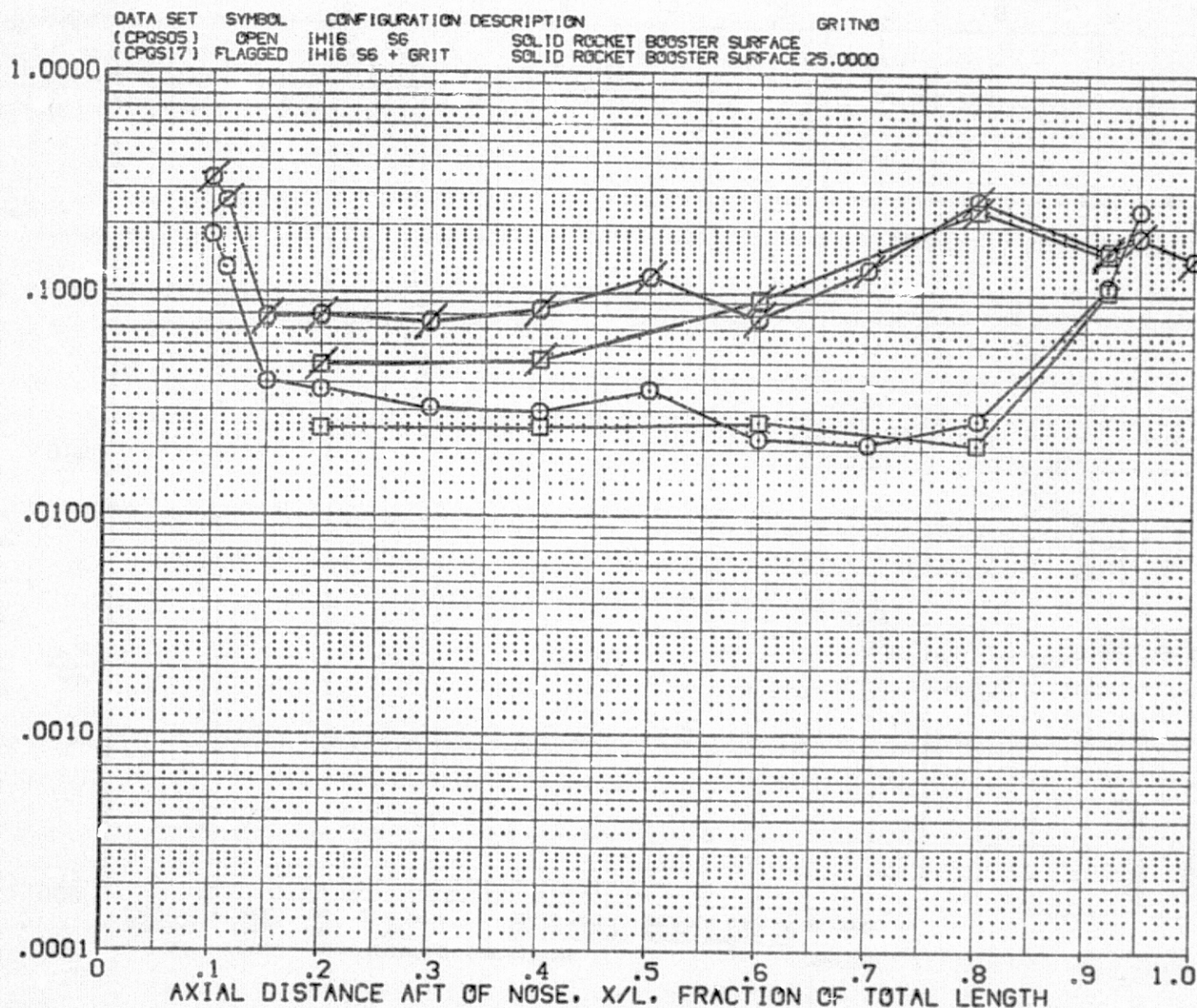


FIG. 55 SRB ALONE

GRIT EFFECT

SYMBOL PHI HAW/HT RN/L  
 ○ 90.000 .900 1.930  
 □ 135.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

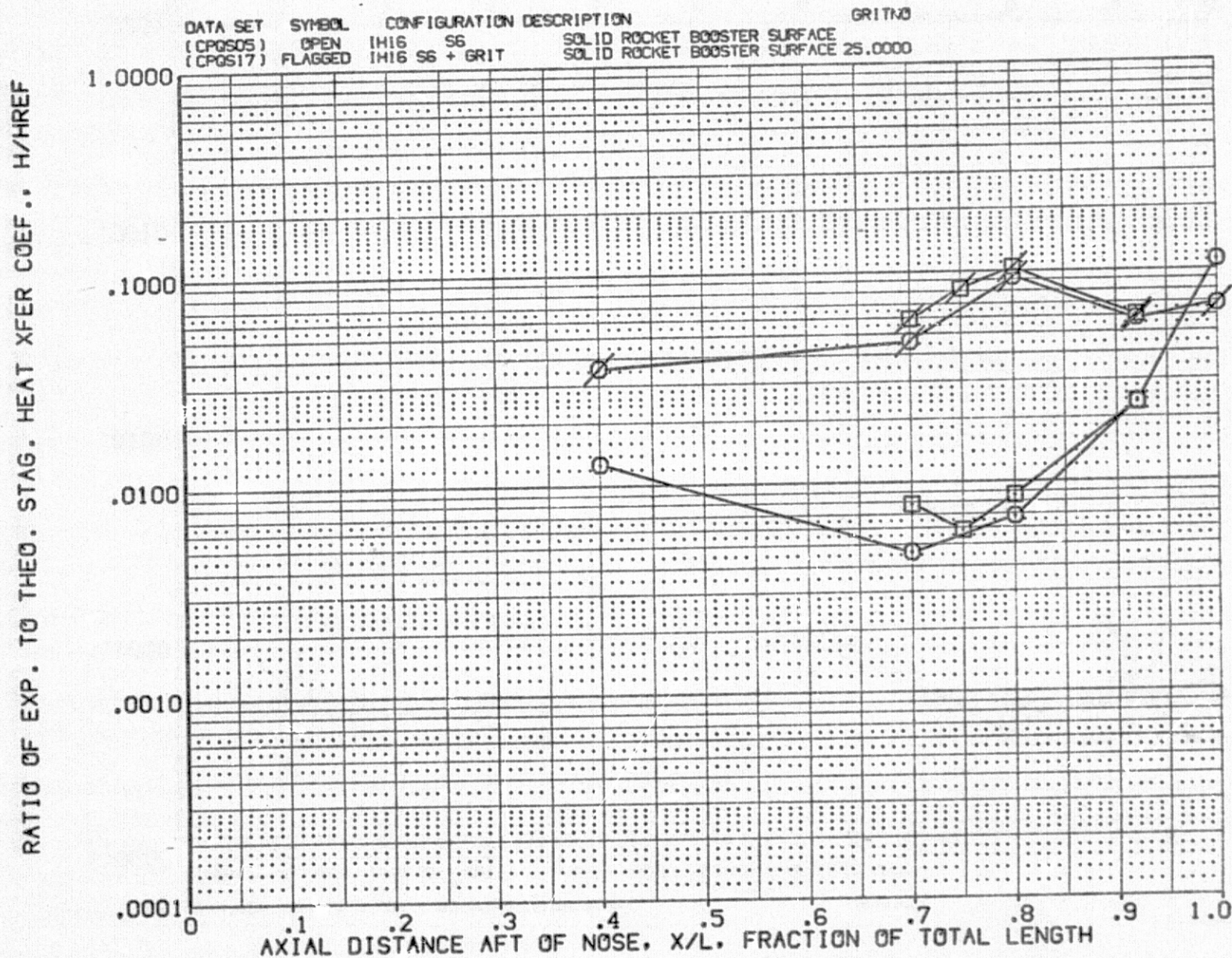


FIG. 55 SRB ALONE

GRIT EFFECT



SYMBOL PHI HAV/HT RN/L  
 O 180.000 .900 1.930  
 □ 225.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $H/H_{REF}$

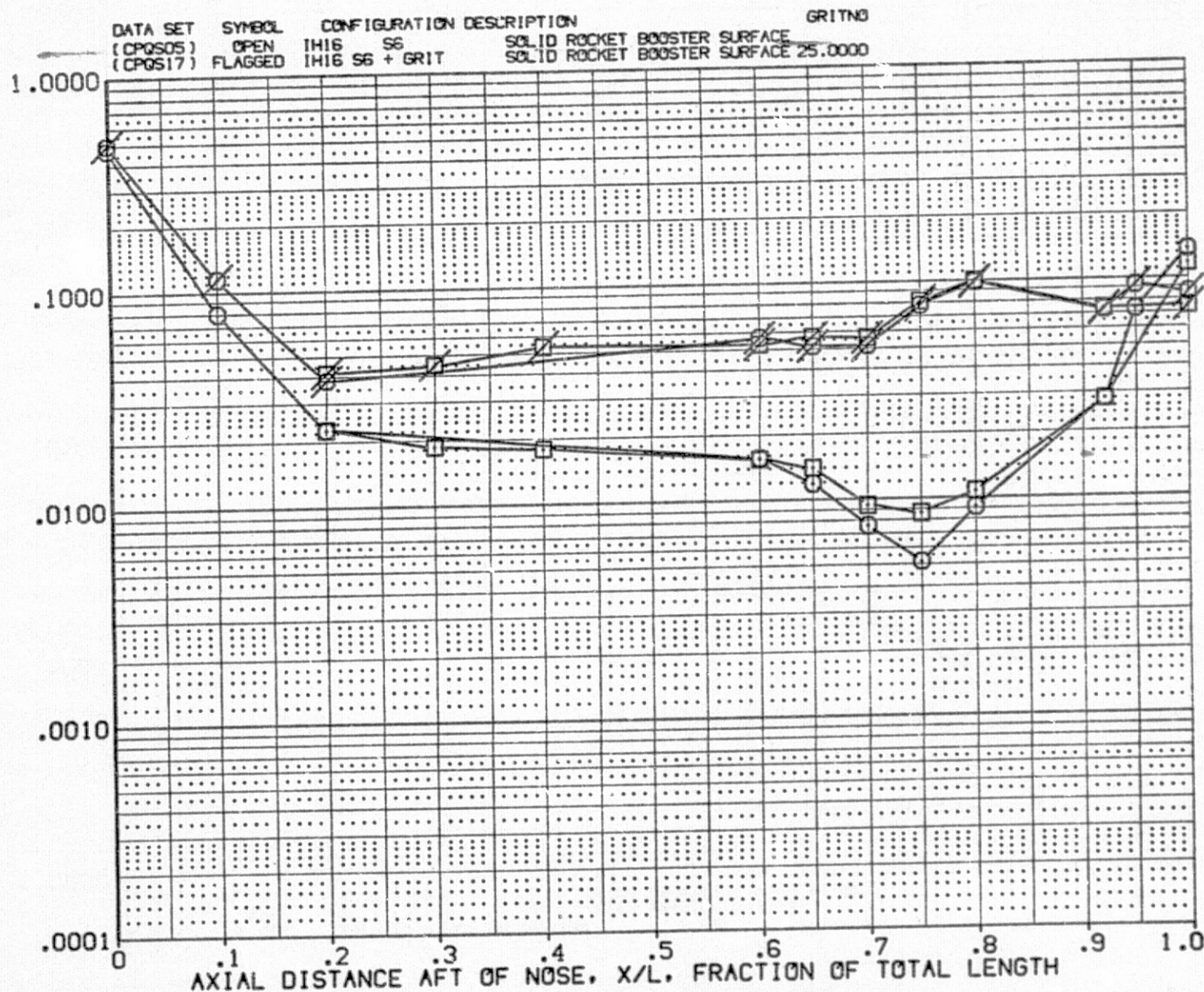


FIG. 55 SRB ALONE

GRIT EFFECT

SYMBOL PHI HAV/HT RN/L  
 ○ 270.000 .900 1.930  
 □ 315.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF. H/HREF

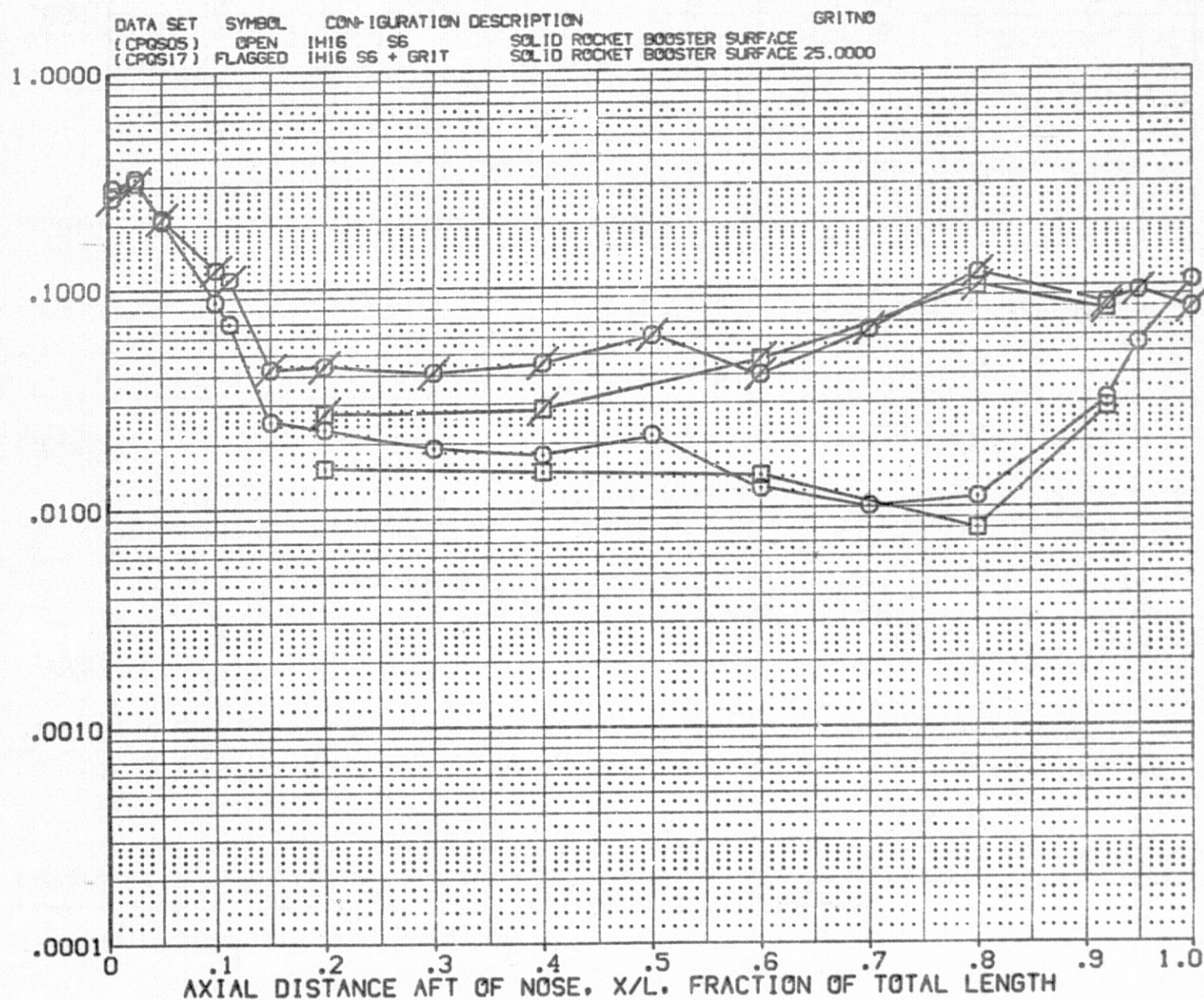


FIG. 55 SRB ALONE

GRIT EFFECT



SYMBOL PHI HAV/HT RN/L  
 ○ 90.000 1.000 1.930  
 □ 135.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $H/H_{REF}$

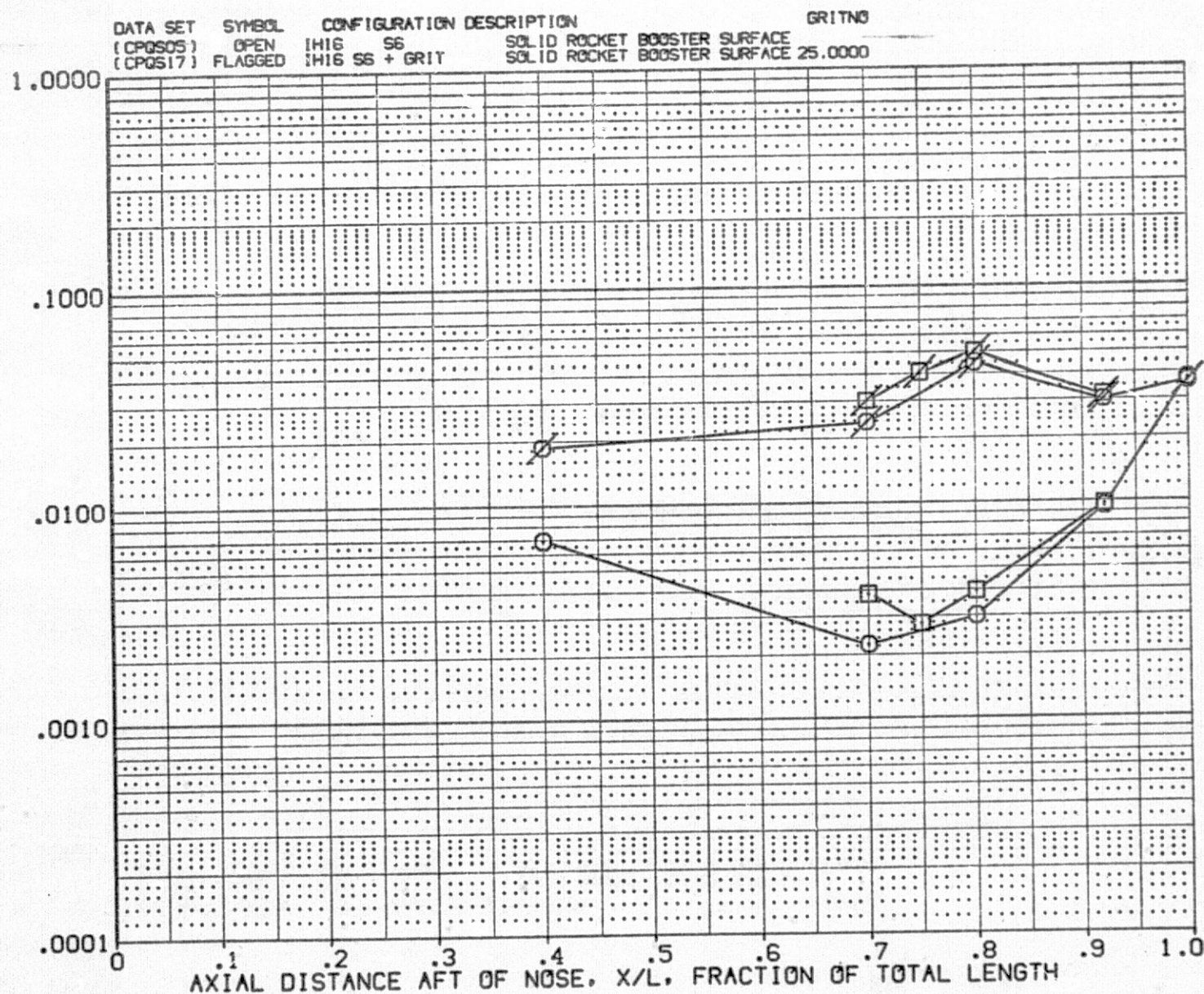


FIG. 55 SRB ALONE

GRIT EFFECT

SYMBOL	PHI	HAW/HT	RN/L
○	180.000	1.000	1.930
□	225.000		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
ALPHA	.000

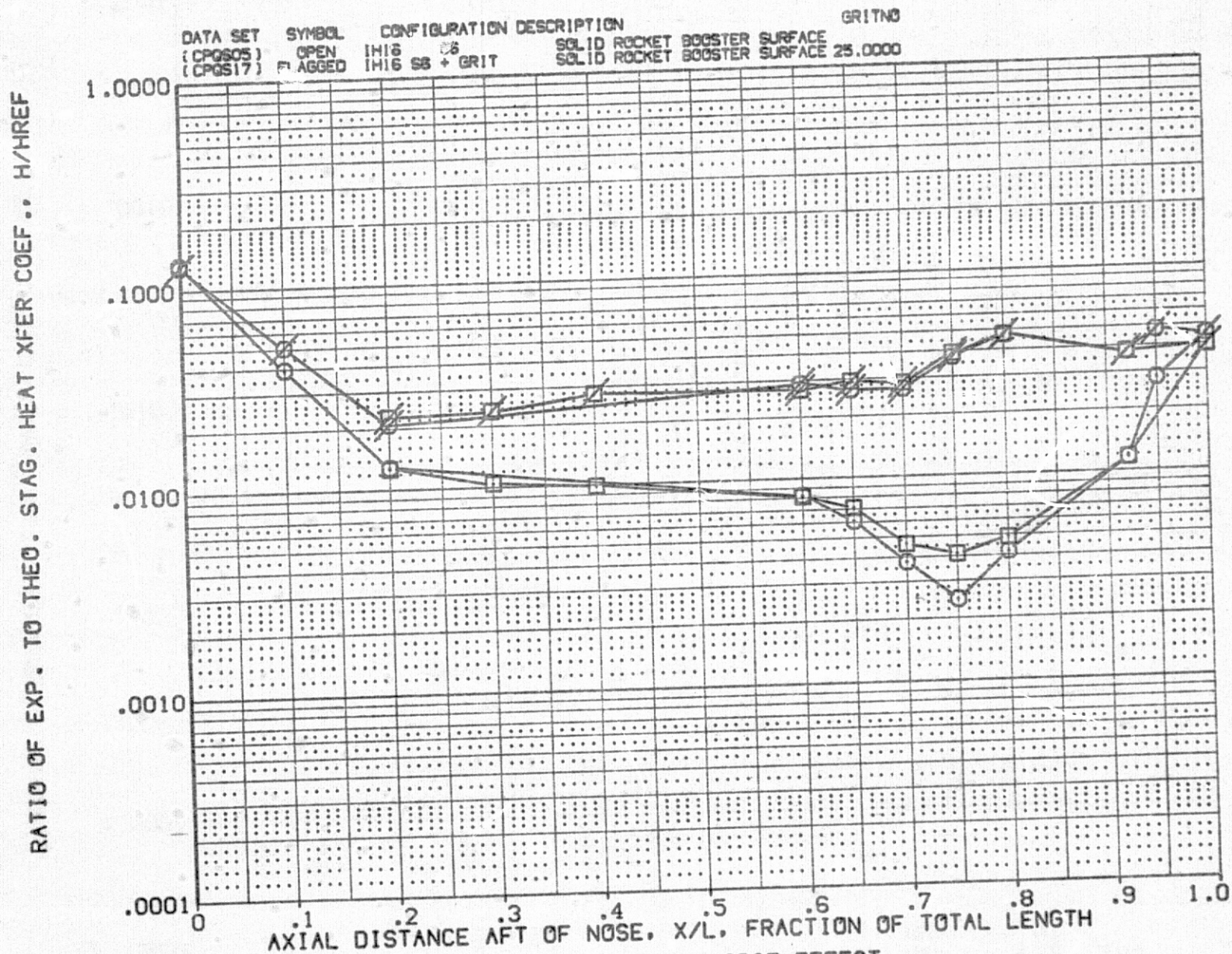


FIG. 55 SRB ALONE

GRIT EFFECT



SYMBOL PHI HAV/HT RN/L  
 ○ 270.000 1.000 1.930  
 □ 315.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

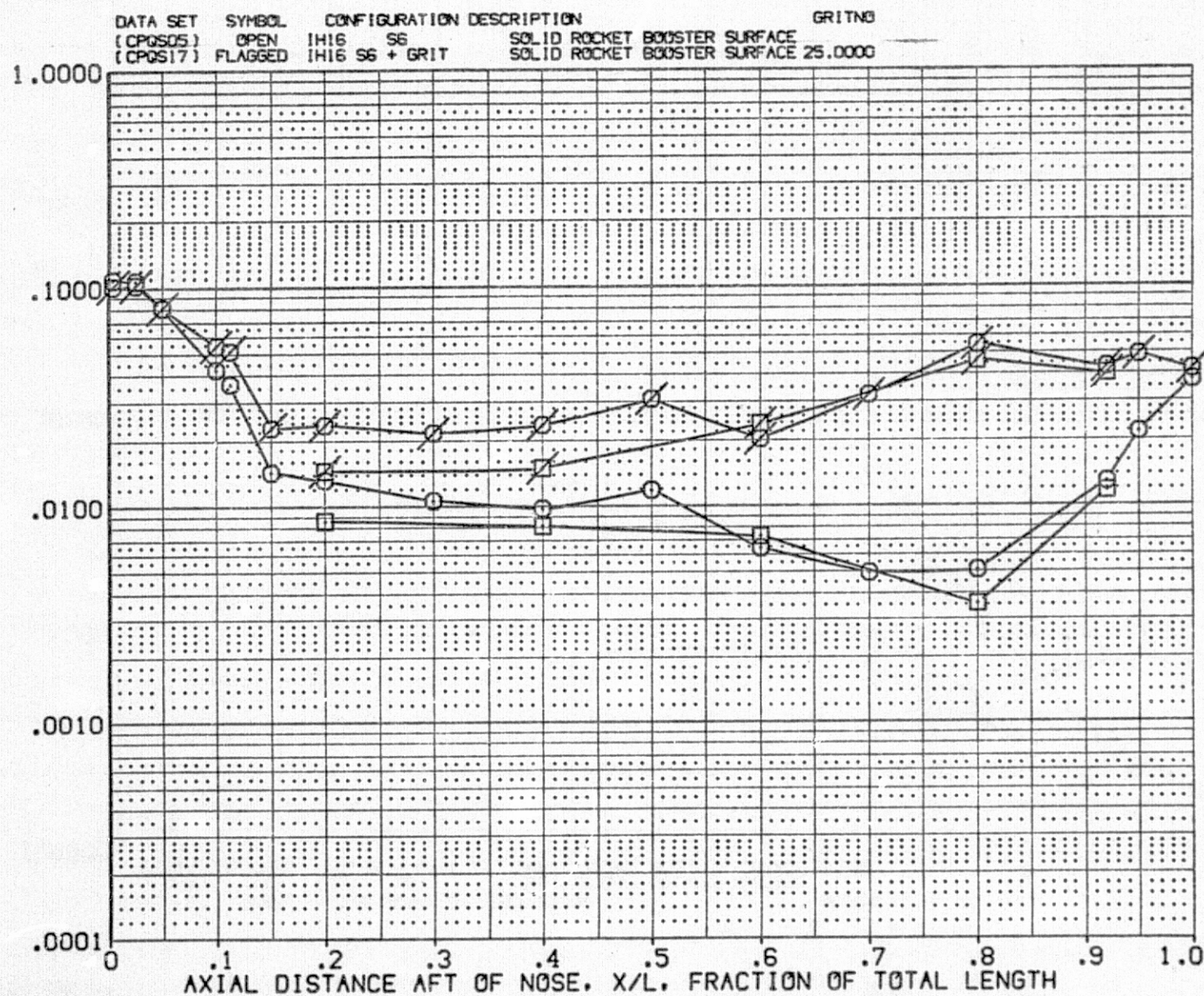


FIG. 55 SRB ALONE

GRIT EFFECT



SYMBOL PHI HAV/HT RN/L  
 ○ 90.000 .850 4.620  
 □ 135.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.,  $H/H_{REF}$

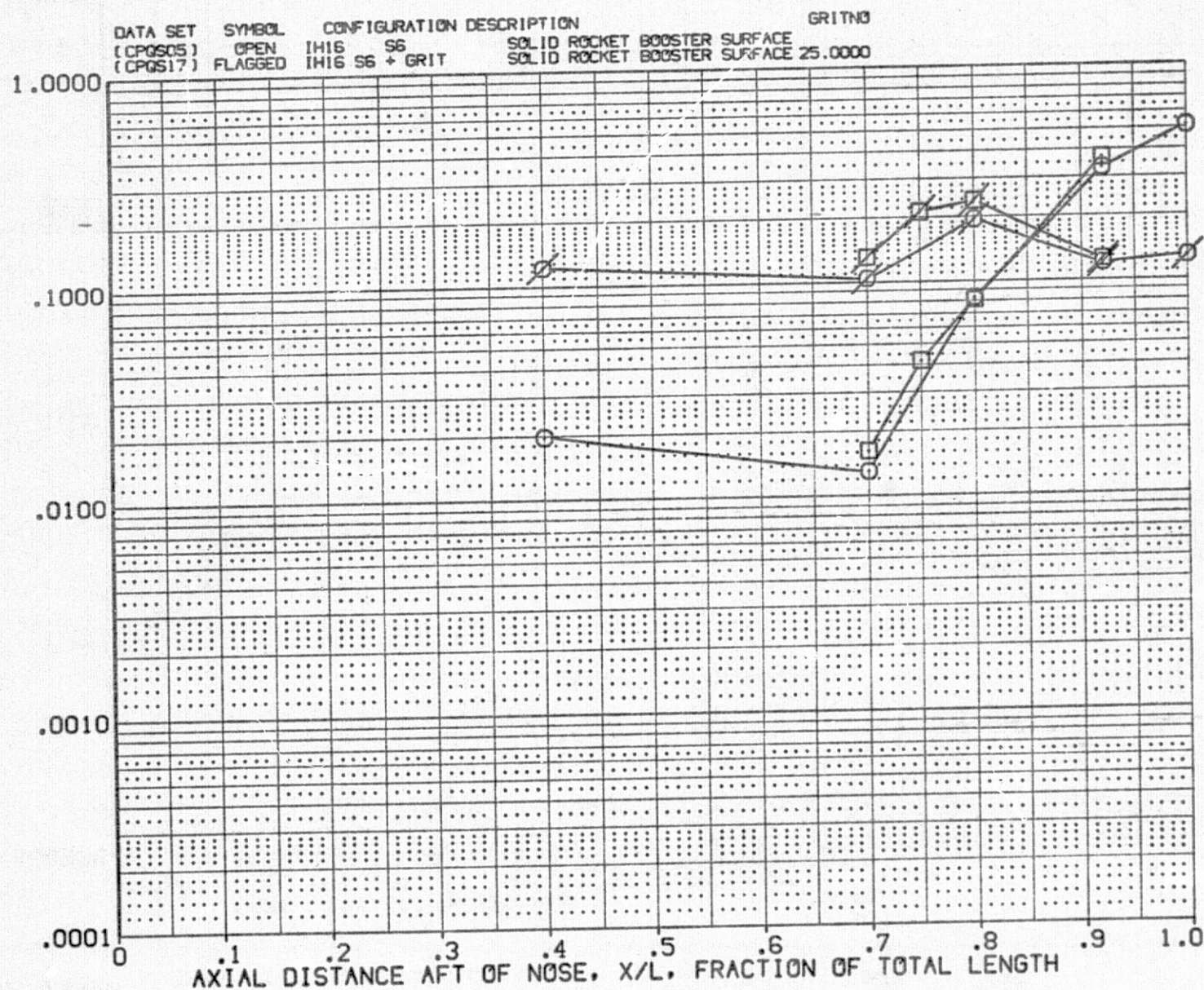


FIG. 55 SRB ALONE

GRIT EFFECT



SYMBOL PHI HAW/HT RN/L  
 ○ 180.000 .850 4.620  
 □ 225.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF. H/HREF

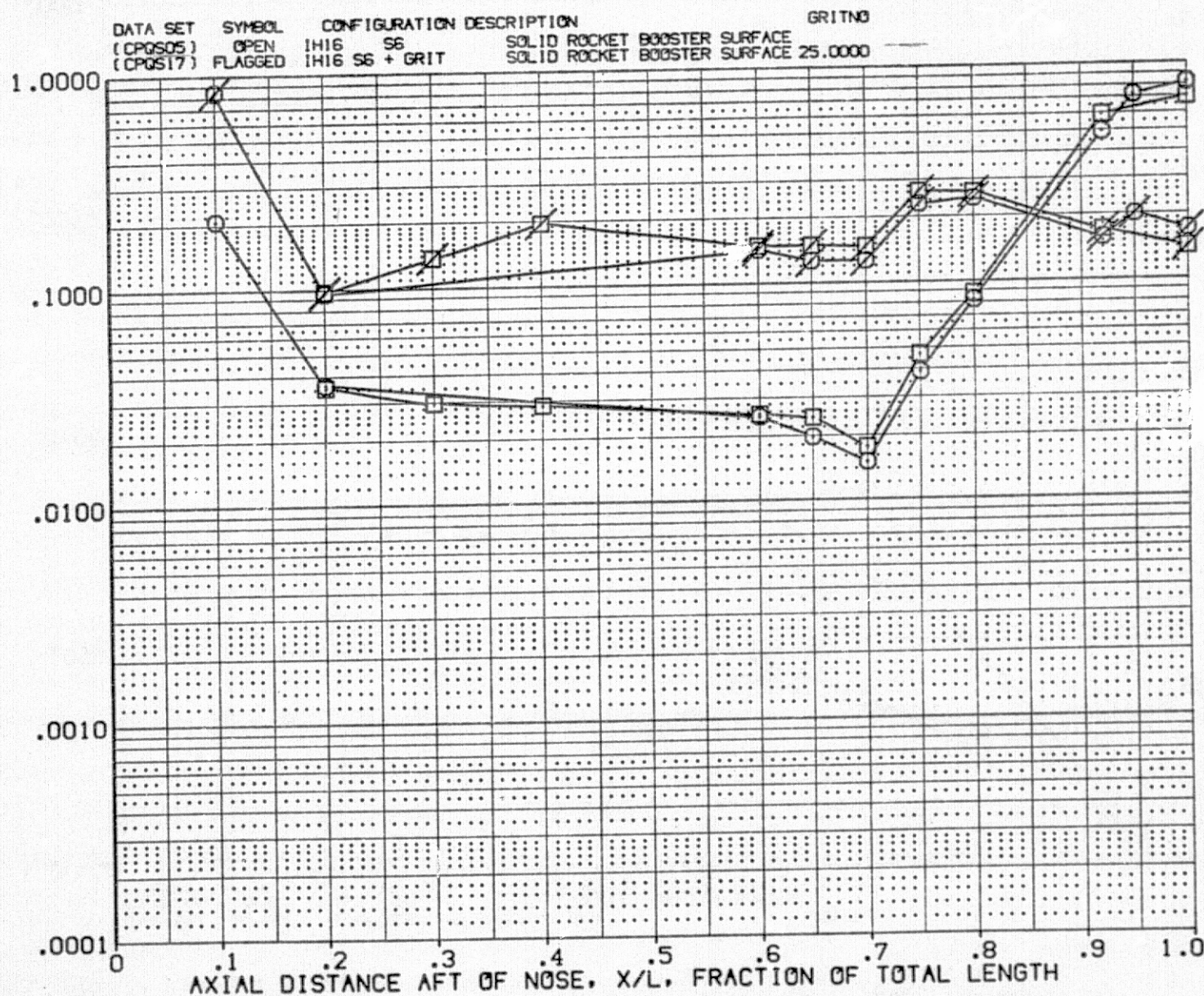


FIG. 55 SRB ALONE

GRIT EFFECT



SYMBOL PHI HAW/HT RN/L  
 ○ 270.000 .850 4.620  
 □ 315.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

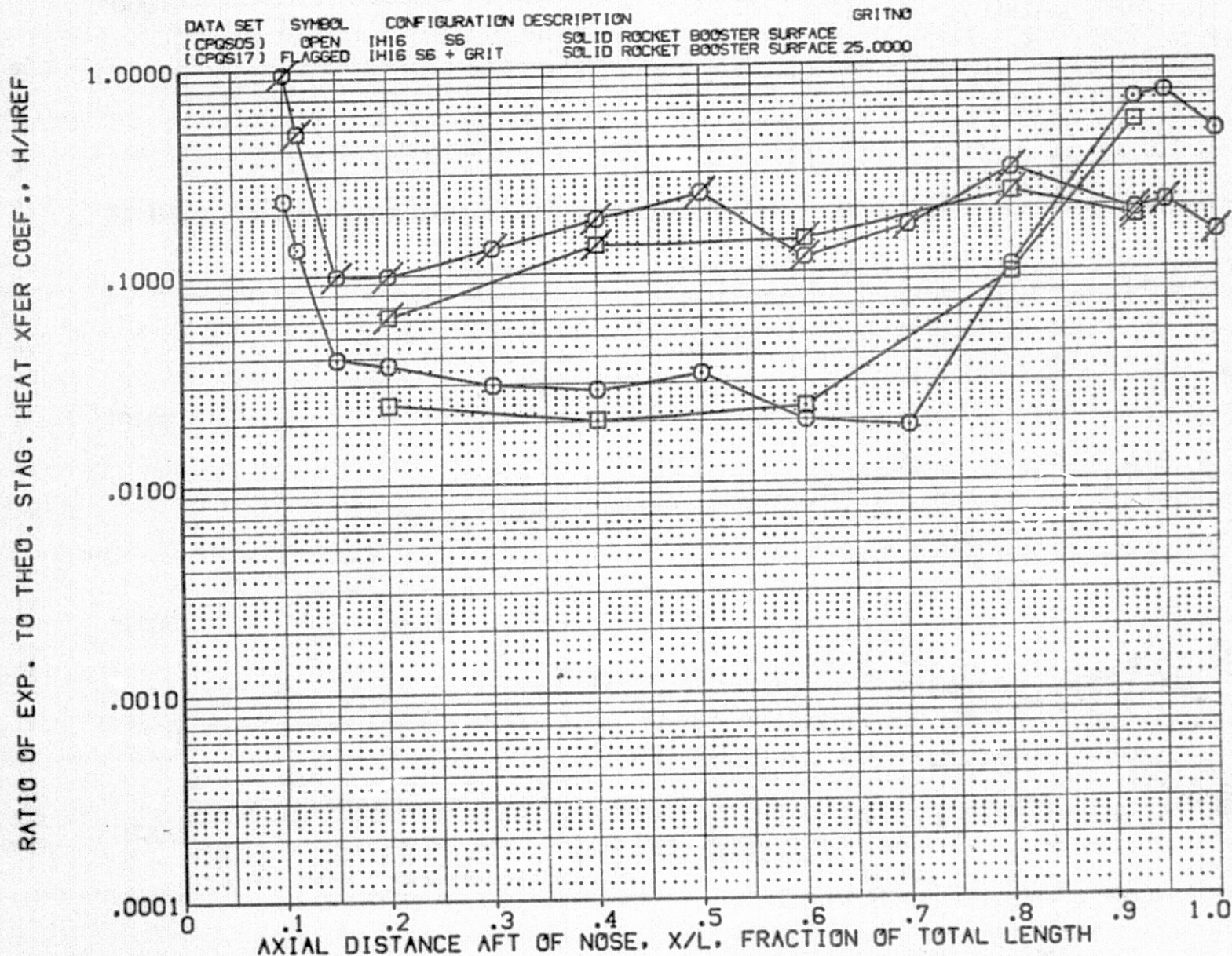


FIG. 55 SRB ALONE

GRIT EFFECT



SYMBOL PHI HAW/HT RN/L  
 ○ 90.000 .900 4.620  
 □ 135.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

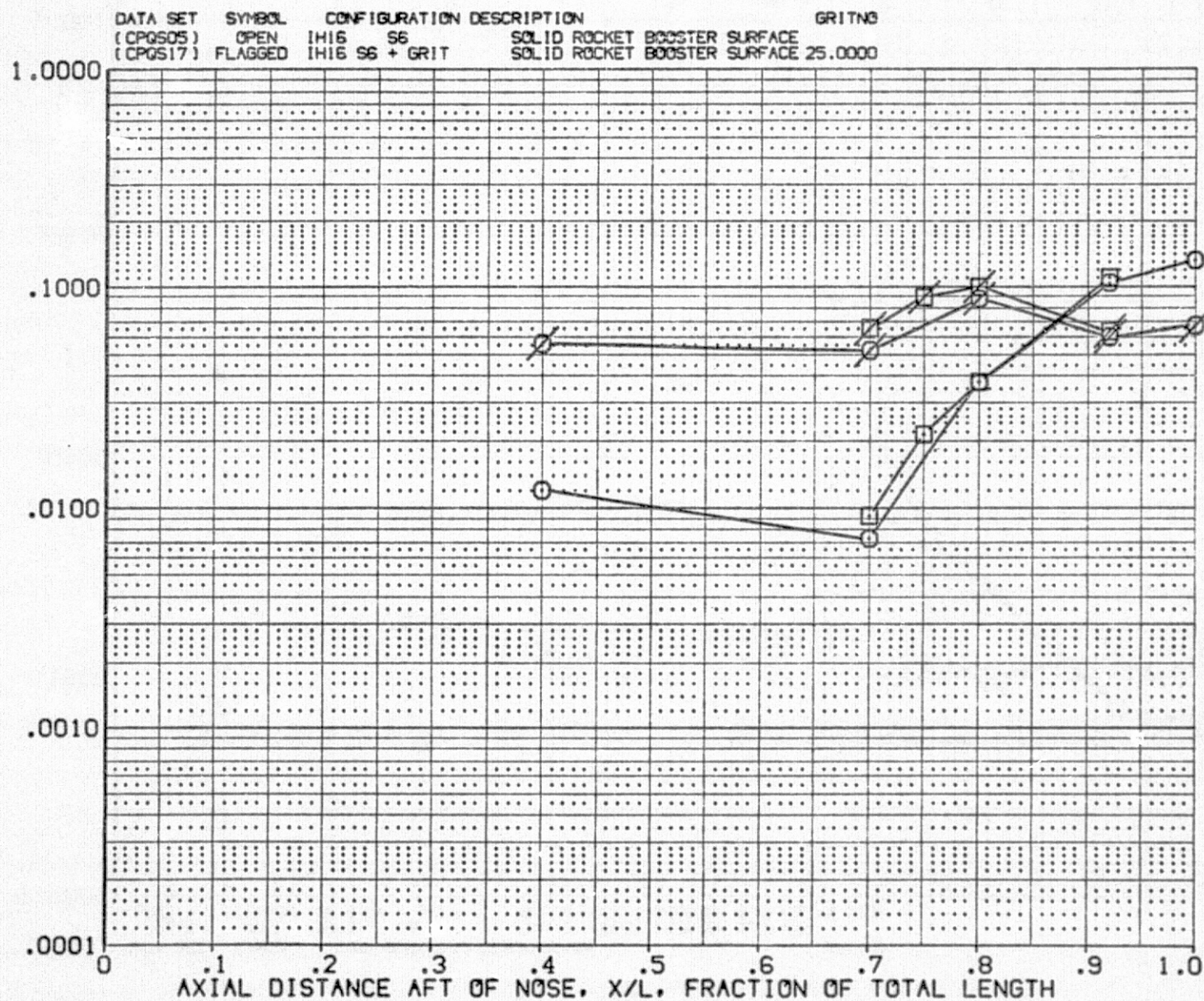


FIG. 55 SRB ALONE

GRIT EFFECT



SYMBOL PHI HAV/HT RN/L  
 ○ 180.000 .900 4.620  
 □ 225.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

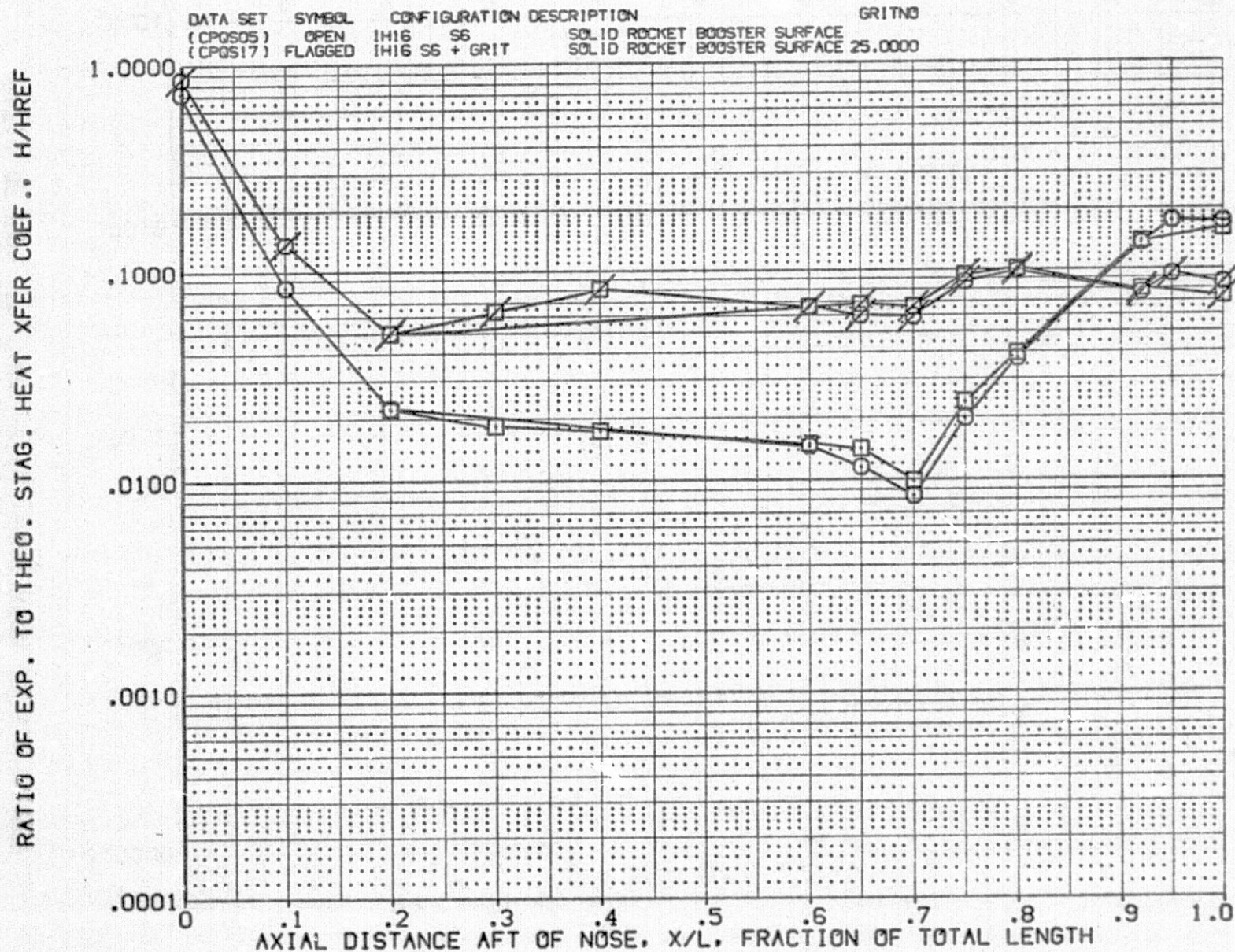


FIG. 55 SRB ALONE

GRIT EFFECT



SYMBOL PHI HAW/HT RN/L  
 ○ 270.000 .900 4.620  
 □ 315.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

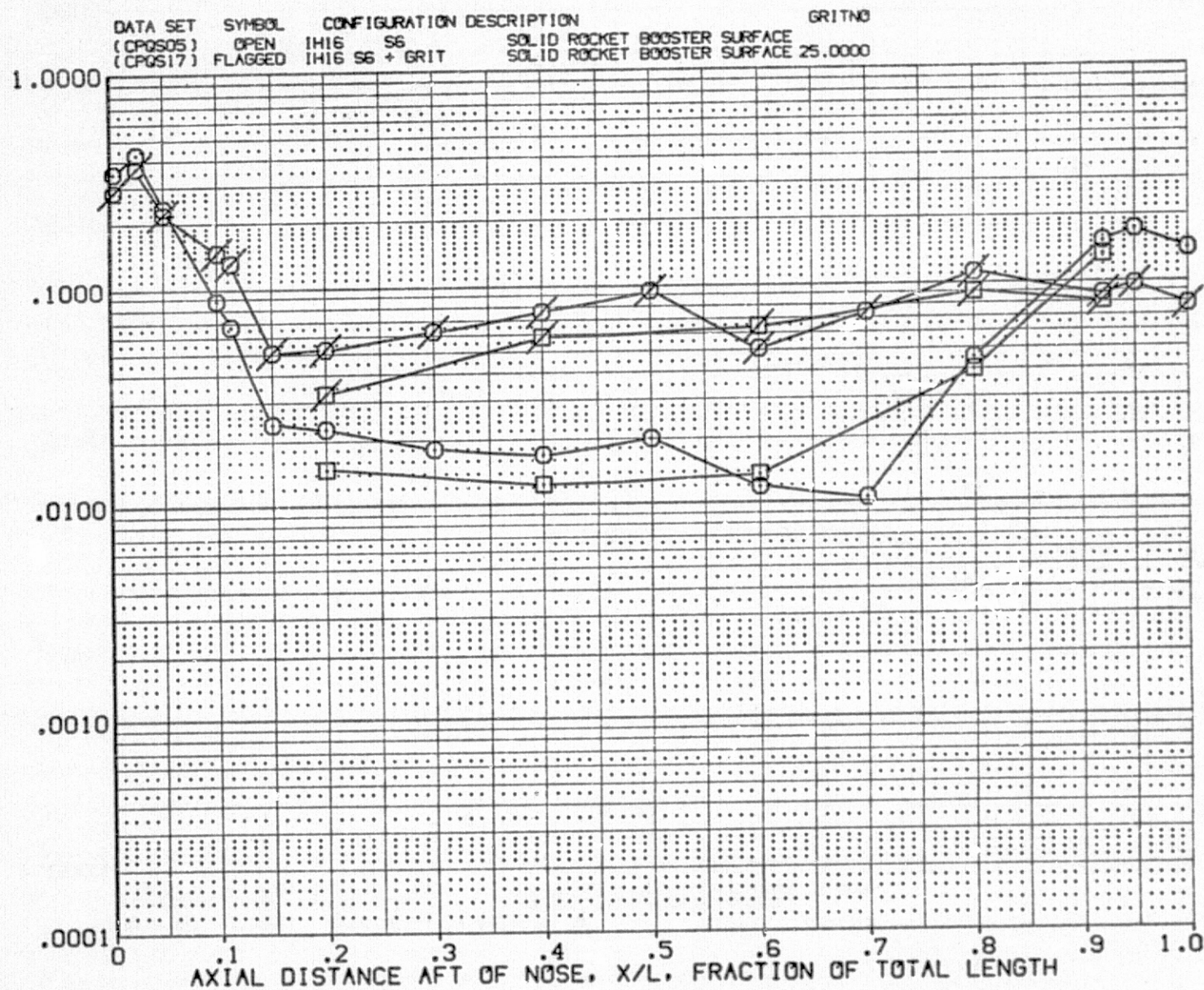


FIG. 55 SRB ALONE

GRIT EFFECT

SYMBOL PHI HAW/HT RN/L  
 ○ 90.000 1.000 4.620  
 □ 135.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

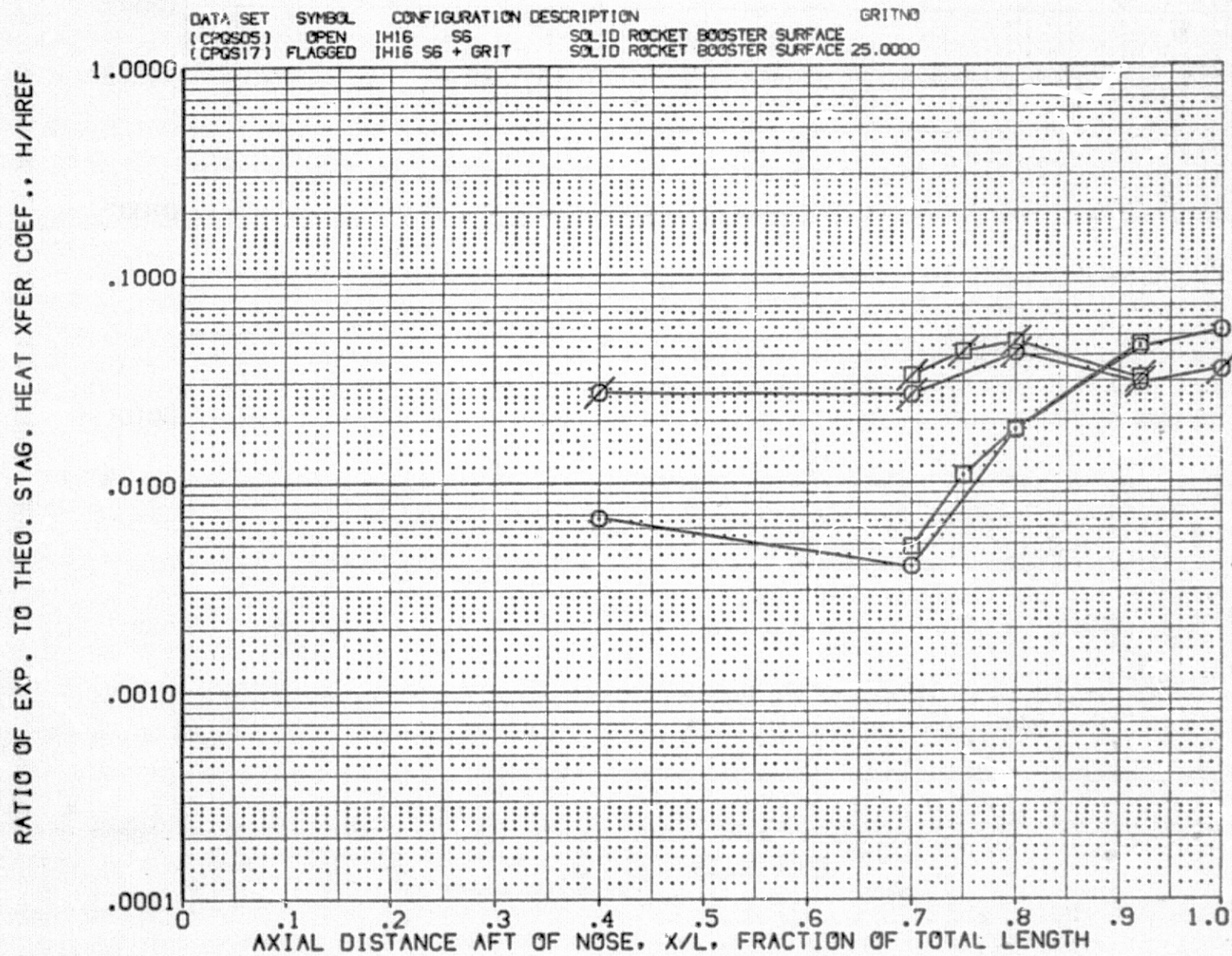


FIG. 55 SRB ALONE

GRIT EFFECT



SYMBOL PHI HAY/HT RN/L  
 ○ 180.000 1.000 4.620  
 □ 225.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

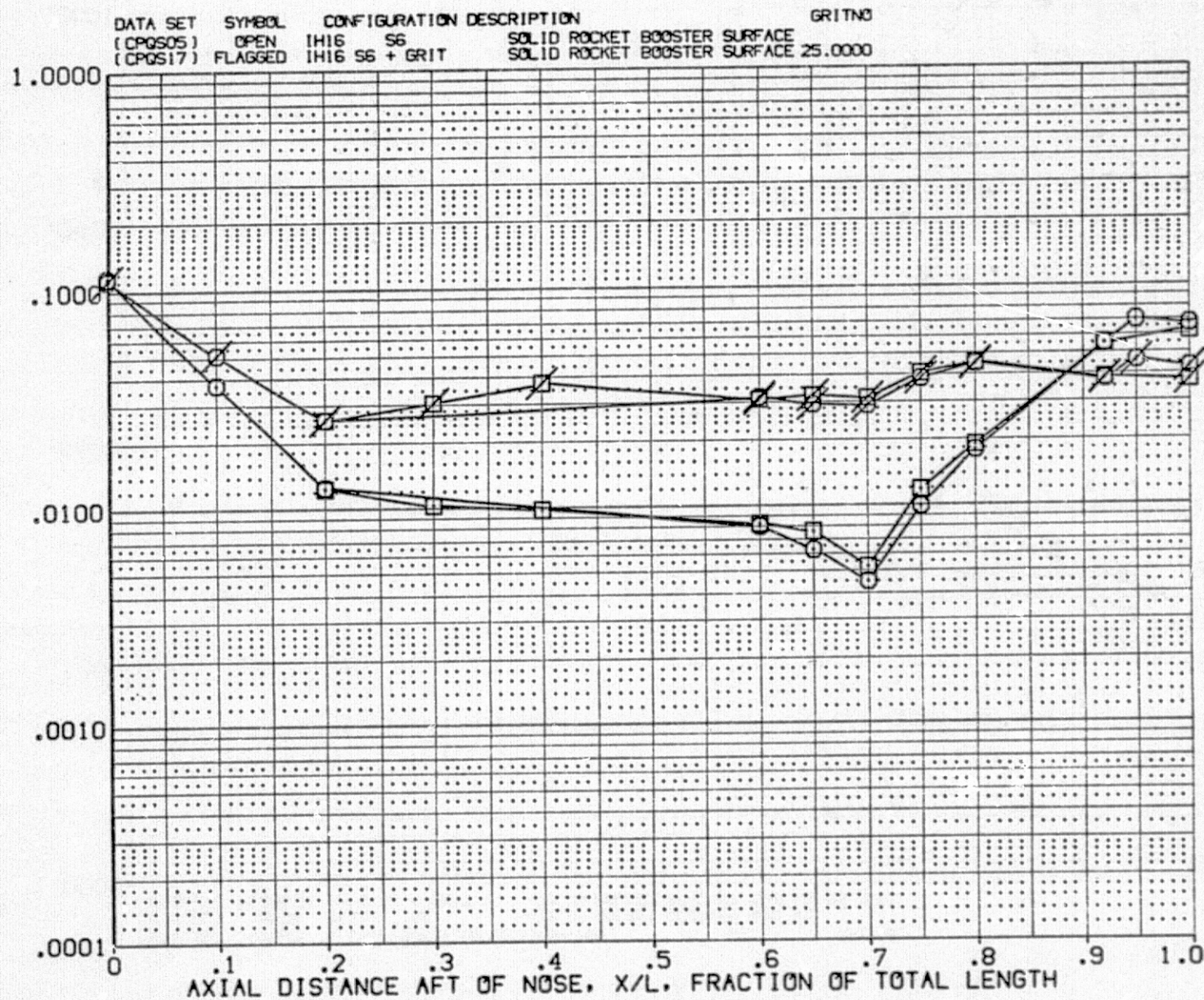


FIG. 55 SRB ALONE

GRIT EFFECT



SYMBOL PHI HAV/HT RN/L  
 ○ 270.000 1.000 4.620  
 □ 315.000

PARAMETRIC VALUES  
 MACH 3.700 ALPHA .000  
 BETA .000

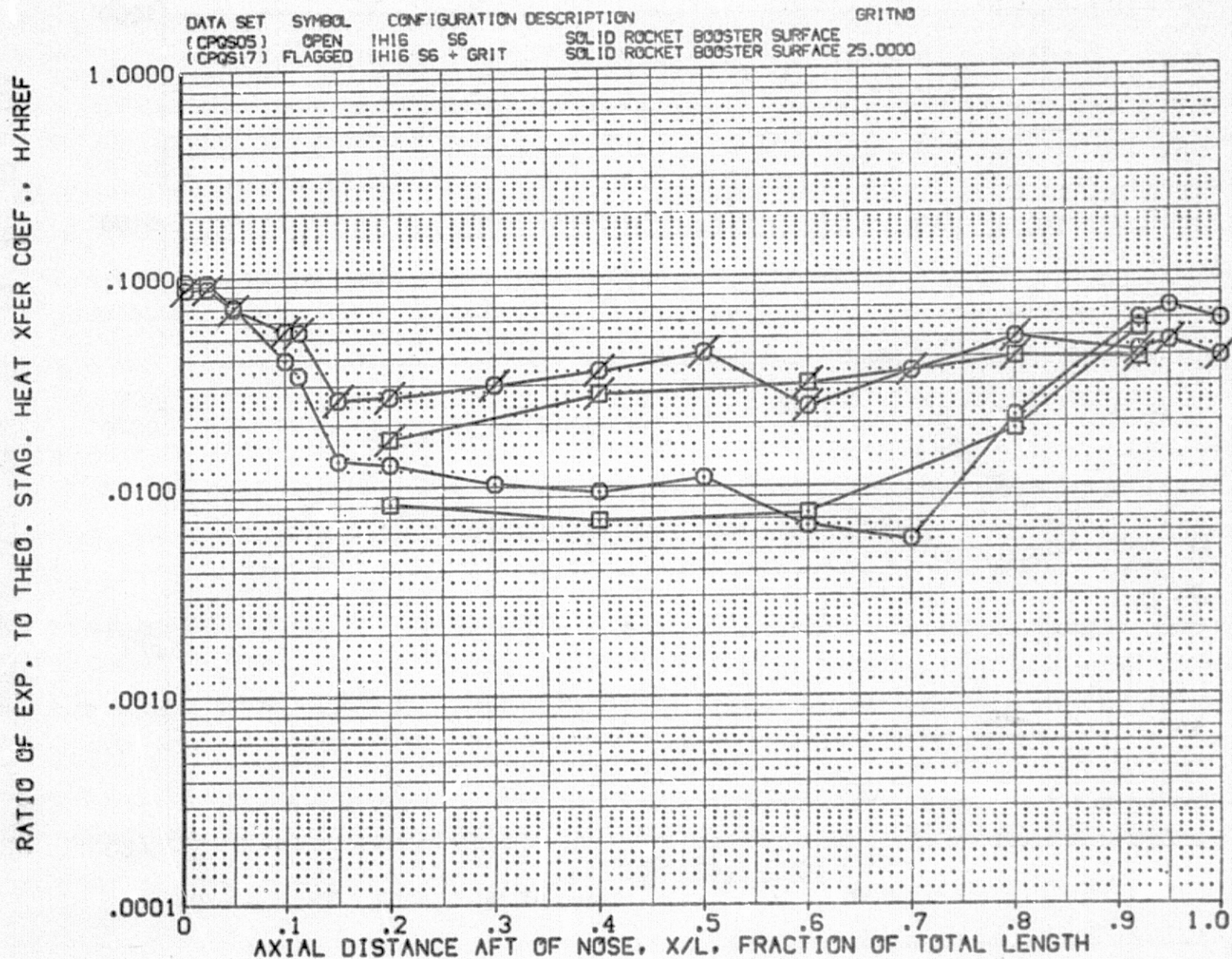


FIG. 55 SRB ALONE

GRIT EFFECT



# IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQS01)

SYMBOL    RN/L    PHI    HAV/HT  
 ○    1.930    90.000    .900  
 □    4.570

PARAMETRIC VALUES  
 MACH    3.700    ALPHA    .000  
 BETA    .000    DELTAH    .175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.  $H/H_{REF}$

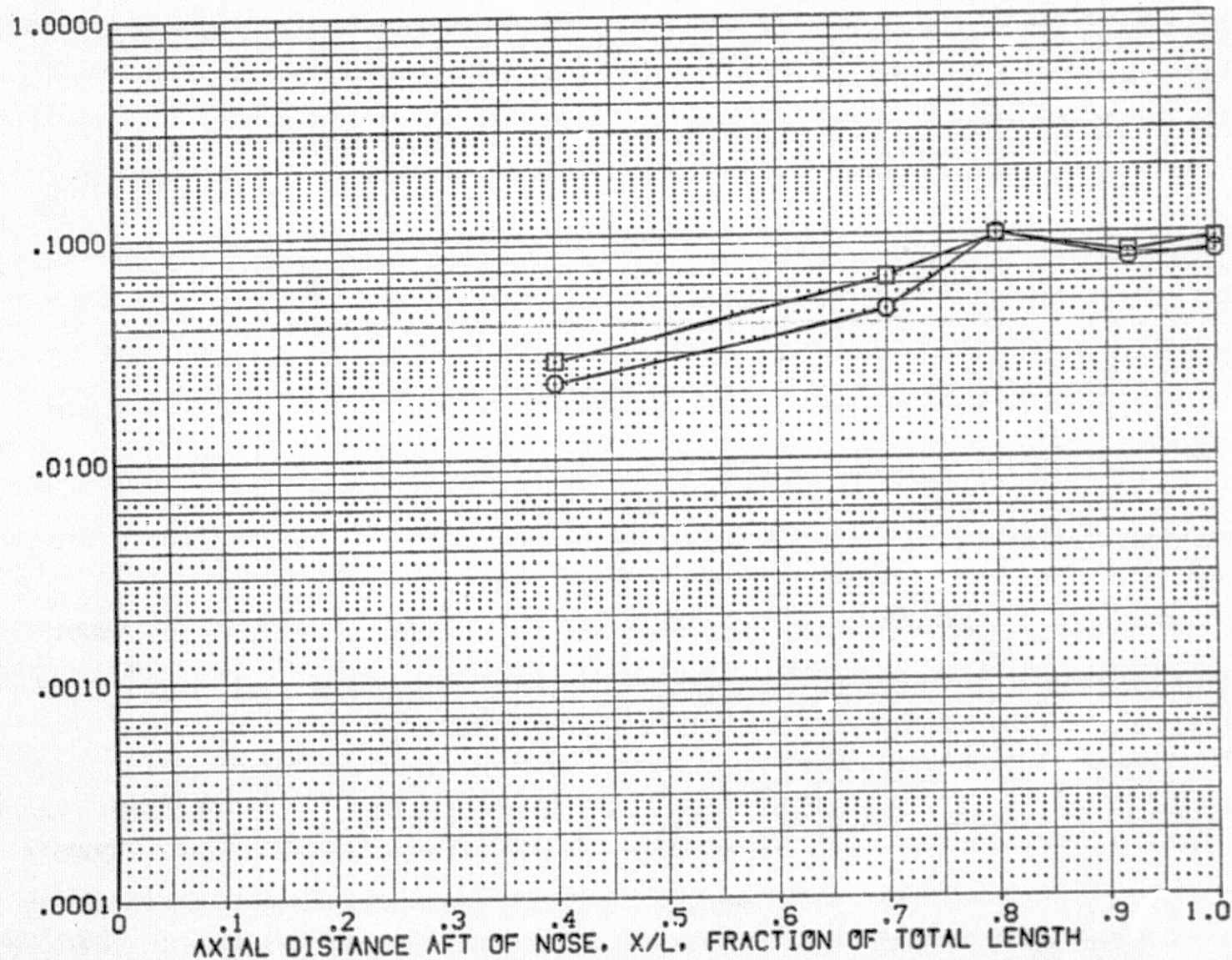


FIG. 56 INTEGRATED VEHICLE - SRB SURFACE RN VARIATION ALPHA = 0 DH = .175

# IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQS01)

SYMBOL	RN/L	PHI	HAV/HT
○	1.930	135.000	.900
□	4.570		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175

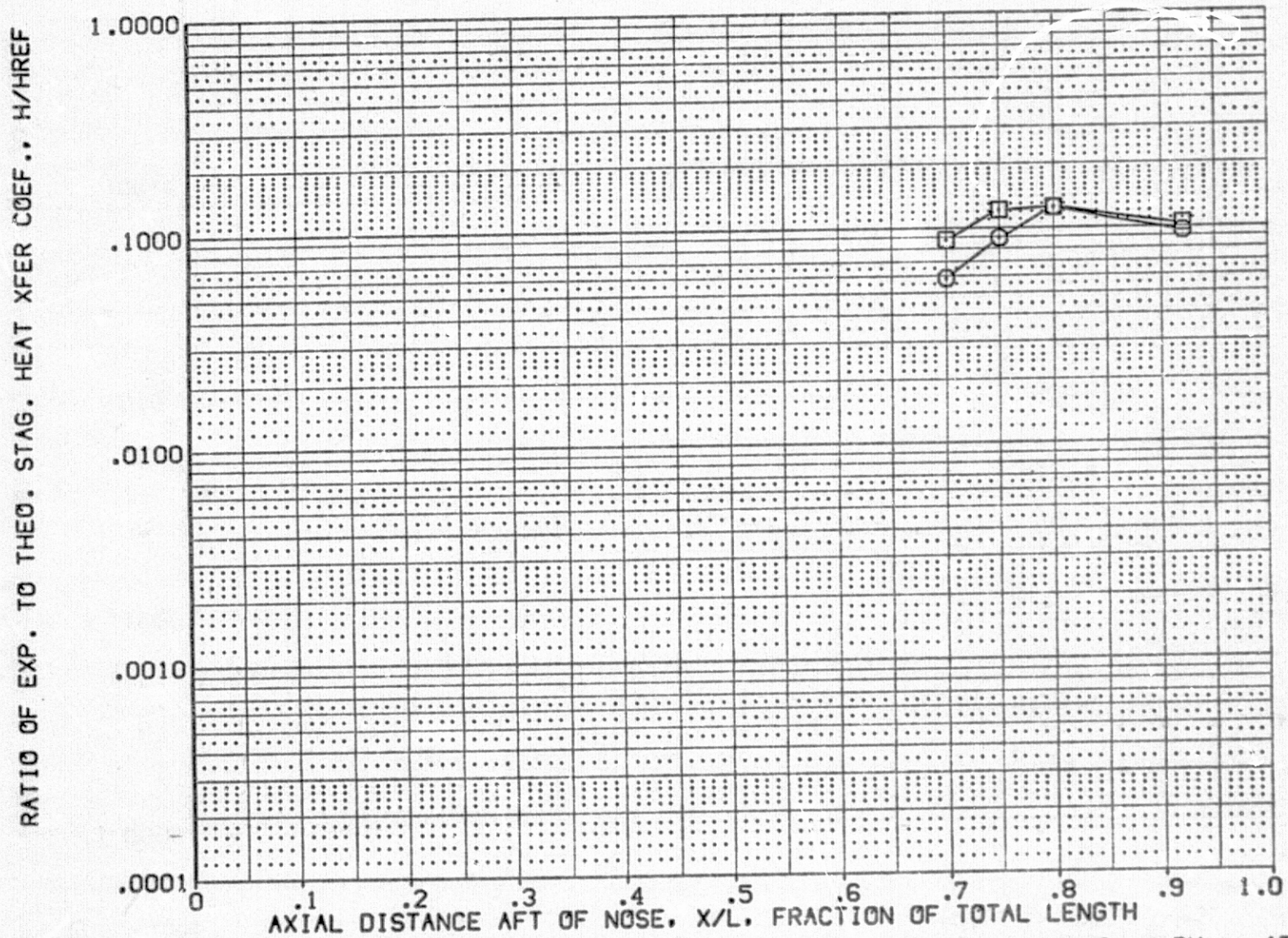


FIG. 56 INTEGRATED VEHICLE - SRB SURFACE RN VARIATION  $\alpha = 0$   $DH = .175$



# IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQS01)

SYMBOL    RN/L    PHI    HAW/HT  
 □    1.930    180.000    .900  
 ○    4.570

PARAMETRIC VALUES  
 MACH    3.700    ALPHA    .000  
 BETA    .000    DELTAH    .175

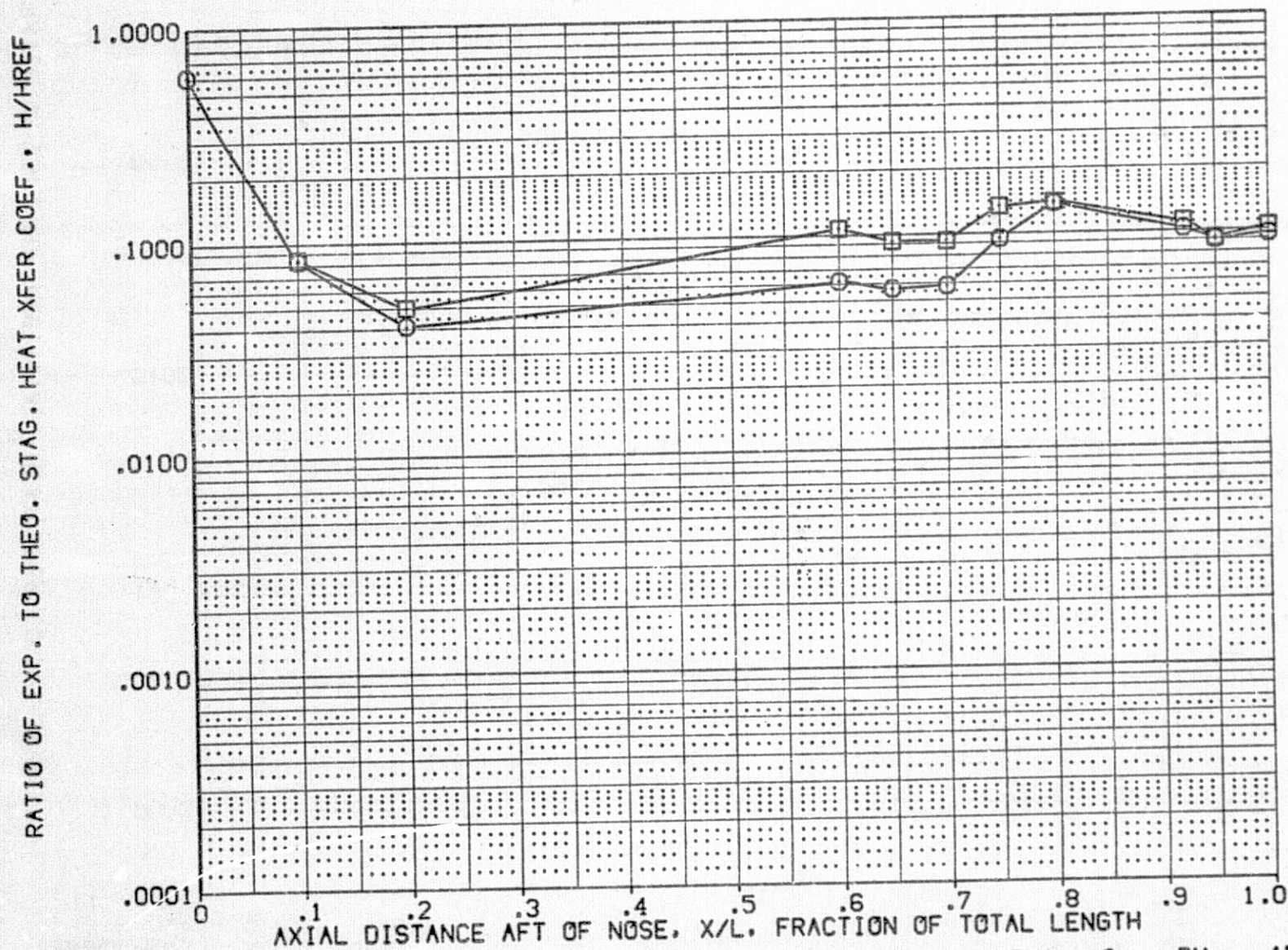


FIG. 56 INTEGRATED VEHICLE - SRB SURFACE RN VARIATION ALPHA = 0 DH = .175

# IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQS01)

SYMBOL	RN/L	PHI	HAV/HT
○	1.930	225.000	.900
□	4.570		

PARAMETRIC VALUES		
MACH	ALPHA	DELTAH
3.700	.000	.175
BETA		

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

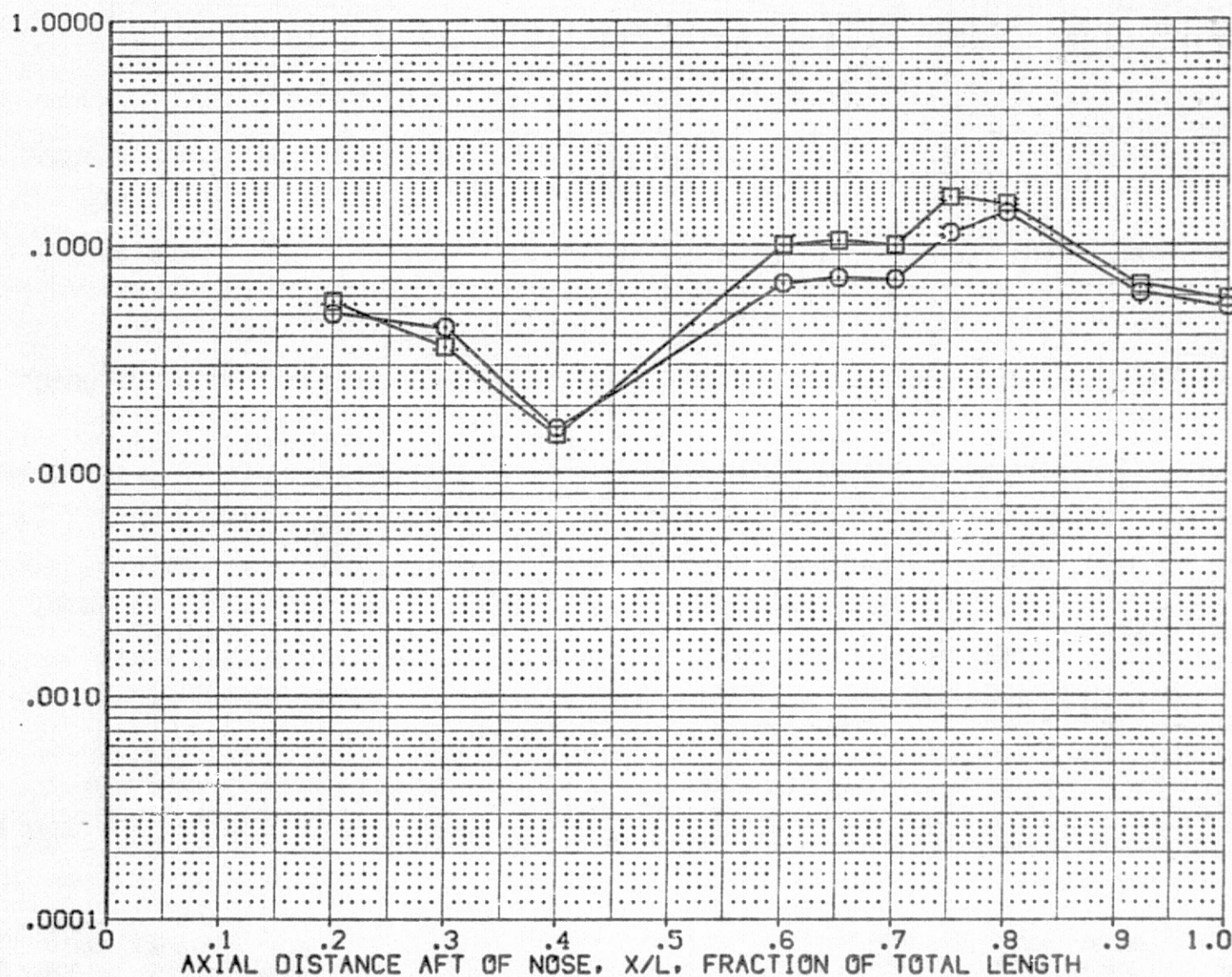


FIG. 56 INTEGRATED VEHICLE - SRB SURFACE RN VARIATION ALPHA = 0 DH = .175



# IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQS01)

SYMBOL	RN/L	PHI	HAW/HT
○	1.930	270.000	.900
□	4.570		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175



FIG. 56 INTEGRATED VEHICLE - SRB SURFACE RN VARIATION ALPHA = 0 DH = .175

SYMBOL ○ □	RN/L	PHI	HAV/HT	MACH BETA	PARAMETRIC VALUES		
	1.930 4.570	315.000	.900		3.700 .000	ALPHA DELTAH	.000 .175

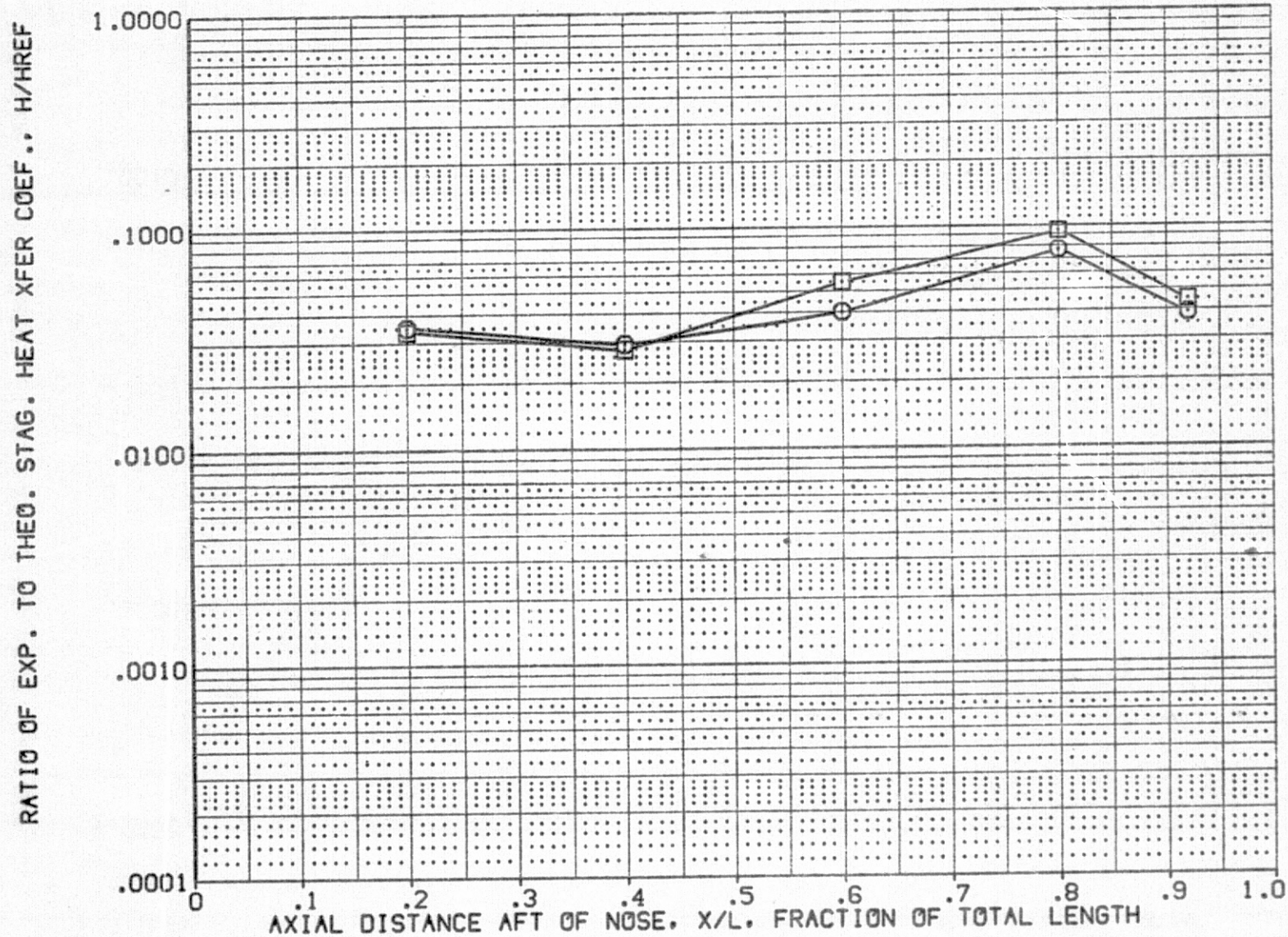


FIG. 56 INTEGRATED VEHICLE - SRB SURFACE RN VARIATION ALPHA = 0 DH = .175



# IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQS02)

SYMBOL    RN/L    PHI    HAV/HT  
 ○    1.990    90.000    .900  
 □    4.560

PARAMETRIC VALUES  
 MACH    3.700    ALPHA    -5.000  
 BETA    .000    DELTAH    .175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

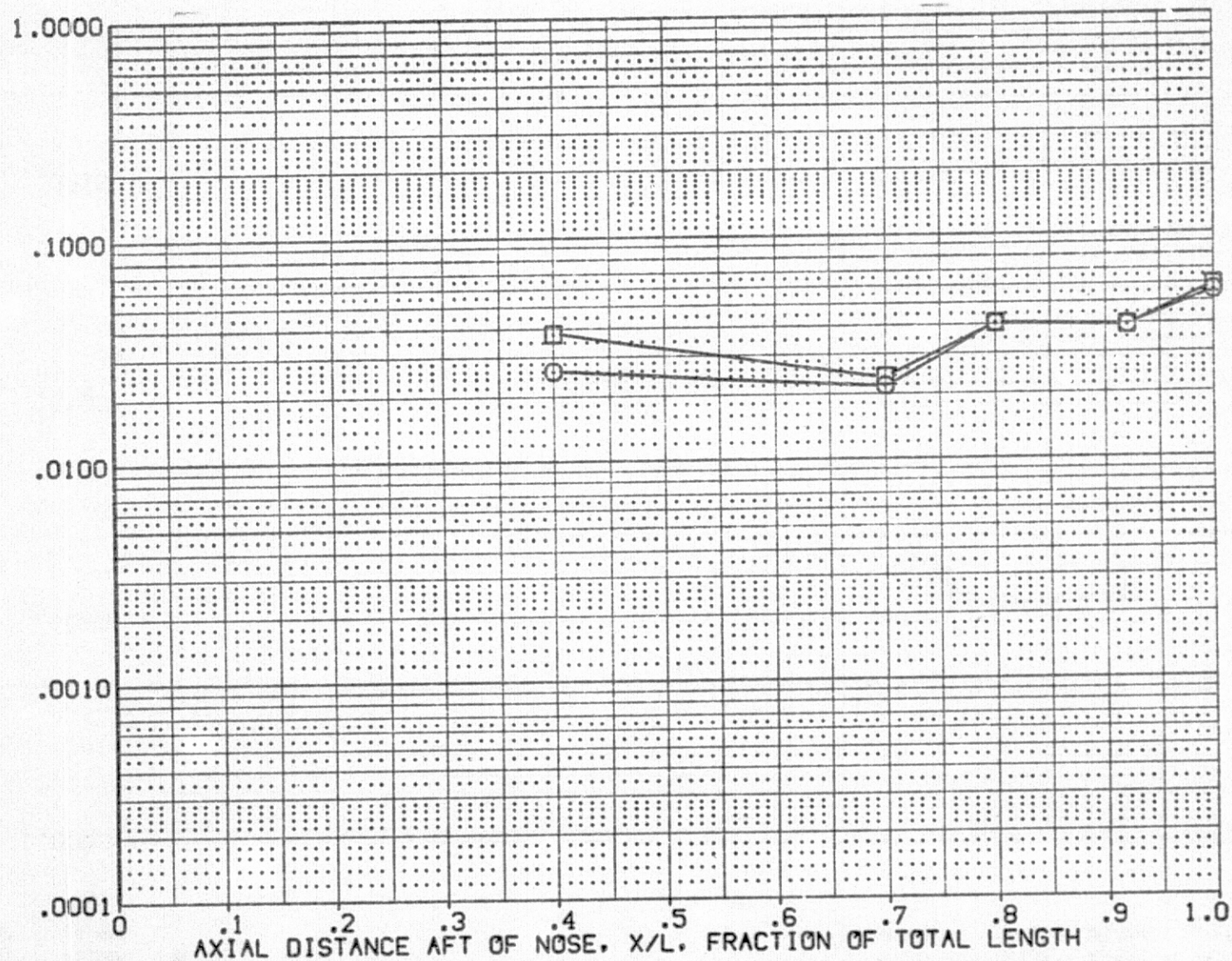


FIG. 57 INTEGRATED VEHICLE - SRB SURFACE RN VARIATION ALPHA = -5 DH = .175

# IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQS02)

SYMBOL	RN/L	PHI	HAW/HT
○	1.990	135.000	.900
□	4.560		

PARAMETRIC VALUES		
MACH	3.700	ALPHA
BETA	.000	DELTAH
		-5.000
		.175

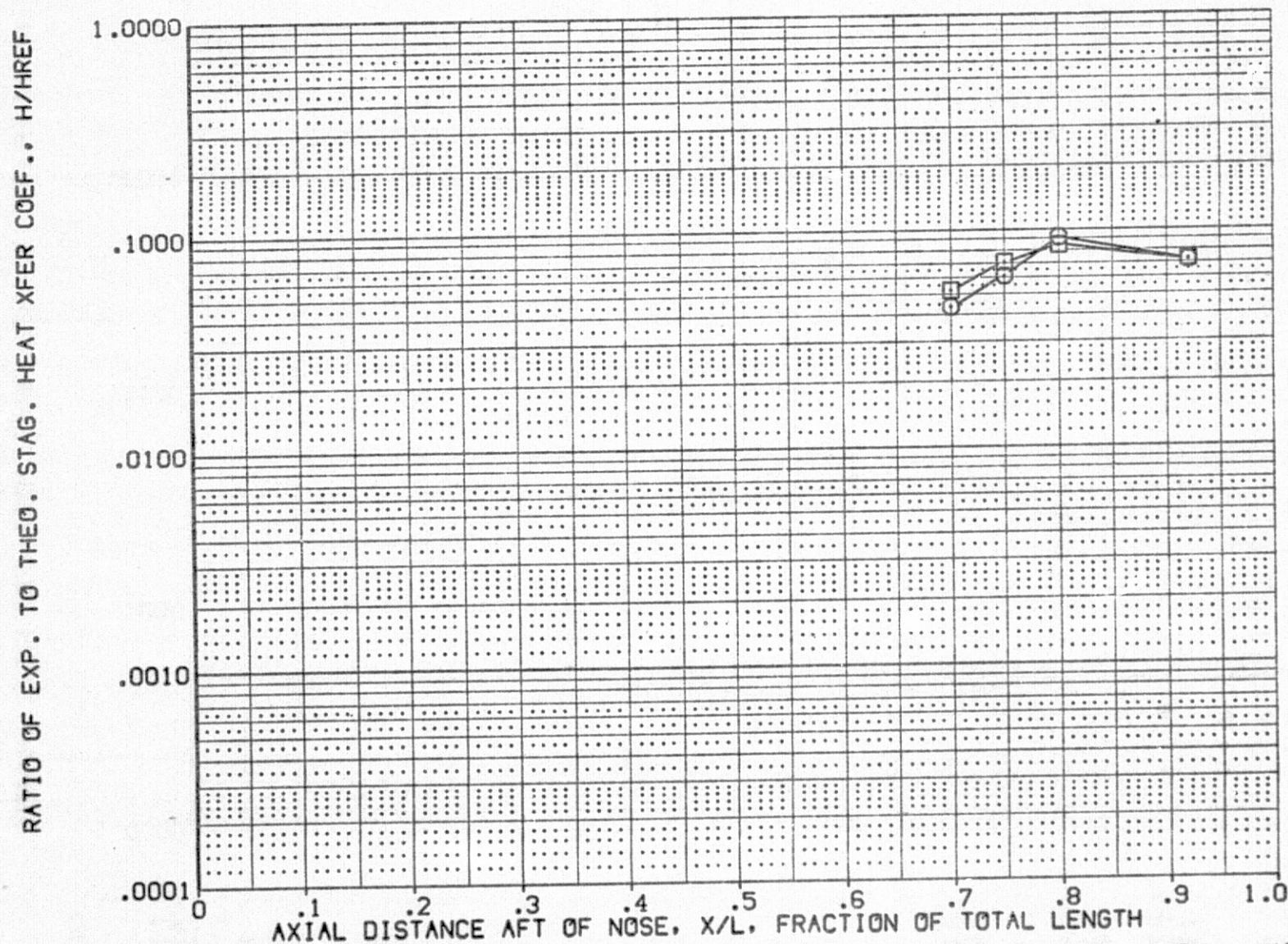


FIG. 57 INTEGRATED VEHICLE - SRB SURFACE RN VARIATION ALPHA = -5 DH = .175



# IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQS02)

SYMBOL  
 ○  
 □

RN/L  
 1.990  
 4.560

PHI  
 180.000

HAW/HT  
 .900

PARAMETRIC VALUES  
 MACH 3.700  
 BETA .000  
 ALPHA -5.000  
 DELTAH .175

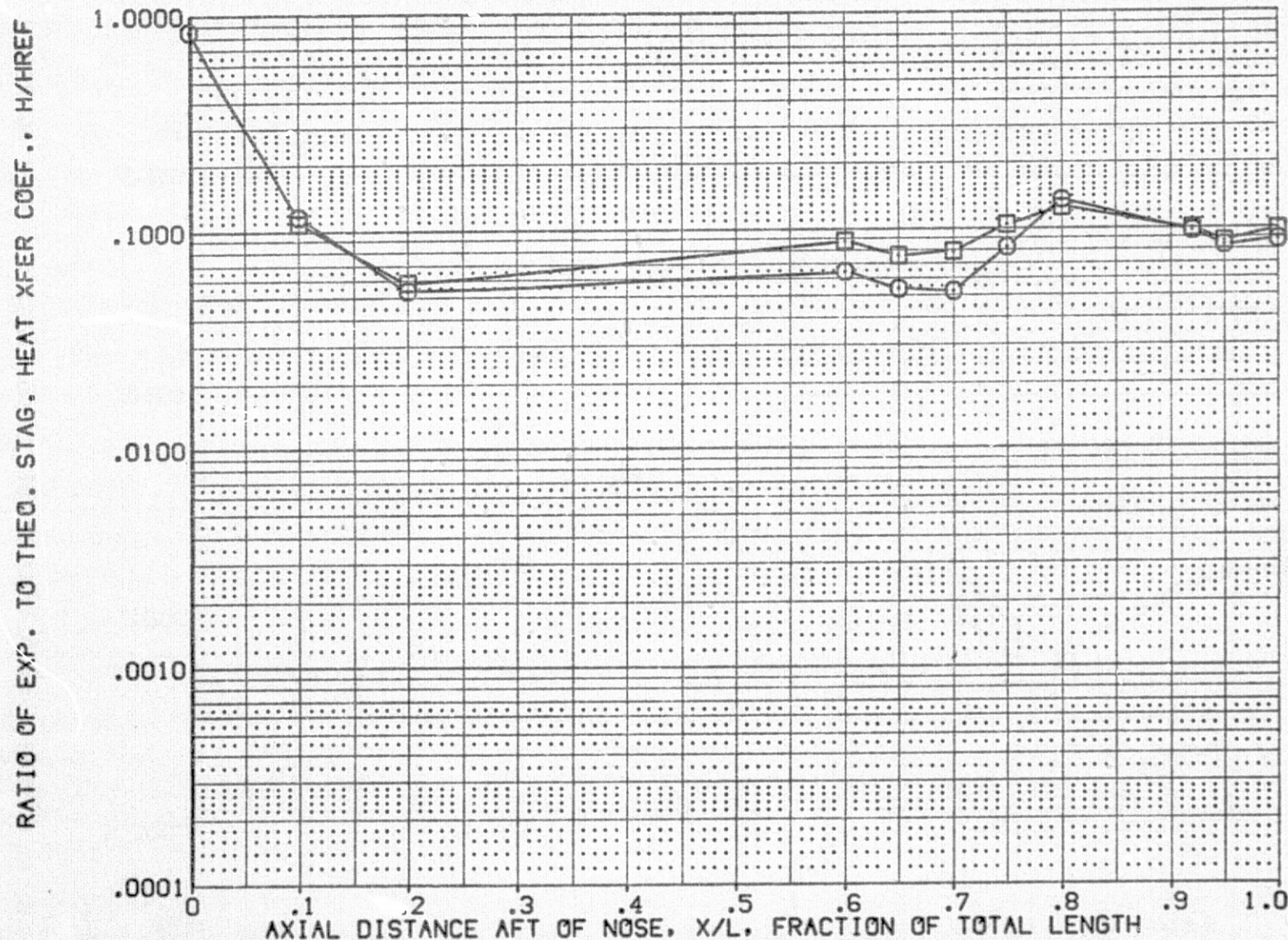


FIG. 57 INTEGRATED VEHICLE - SRB SURFACE RN VARIATION ALPHA = -5 DH = .175



# IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQS02)

SYMBOL	RN/L	PHI	HAW/HT
○	1.990	225.000	.900
□	4.560		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
ALPHA	-5.000
DELTAH	.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

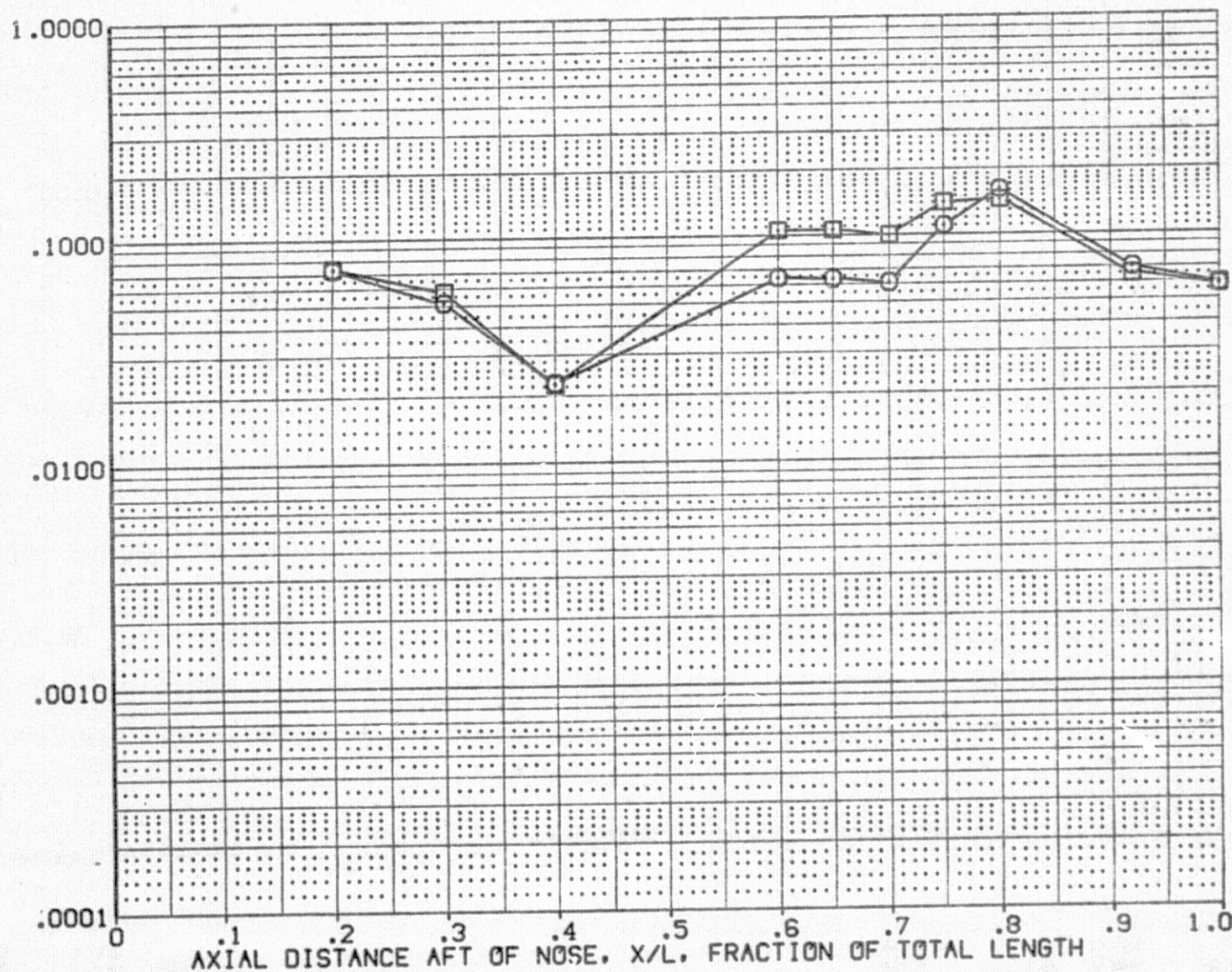


FIG. 57 INTEGRATED VEHICLE - SRB SURFACE RN VARIATION ALPHA = -5 DH = .175



# IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQS02)

SYMBOL    RN/L    PHI    HAV/HT  
 □    1.990    270.000    .900  
 ○    4.560

PARAMETRIC VALUES  
 MACH    3.700    ALPHA    -5.000  
 BETA    .000    DELTAH    .175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.  $H/H_{REF}$

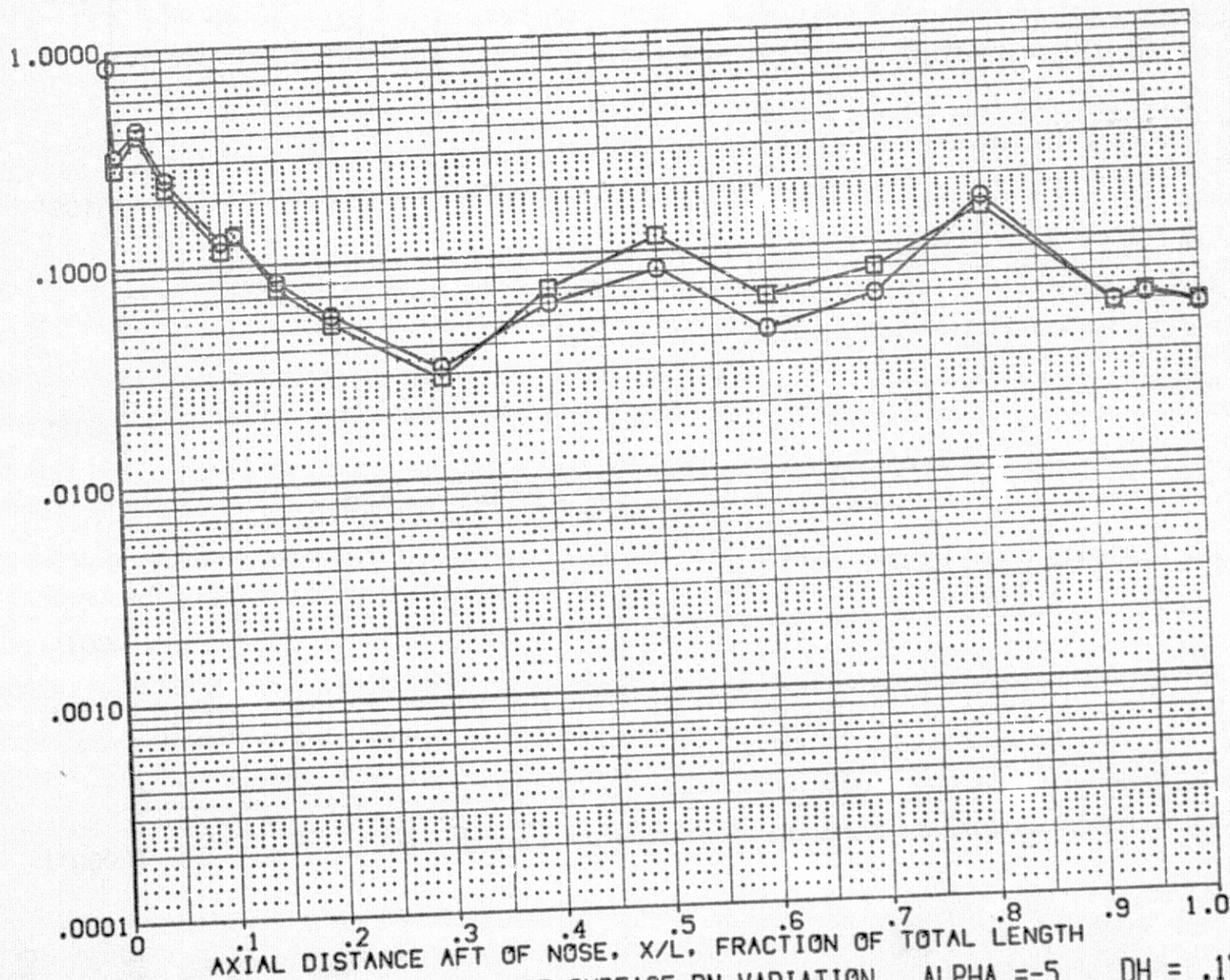


FIG. 57 INTEGRATED VEHICLE - SRB SURFACE RN VARIATION    ALPHA = -5    DH = .175

# IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQS02)

SYMBOL  
○  
□

RN/L  
1.990  
4.560

PHI  
315.000

HAW/HT  
.900

MACH  
BETA

PARAMETRIC VALUES

3.700  
.000

ALPHA  
DELTAH

-5.000  
.175

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

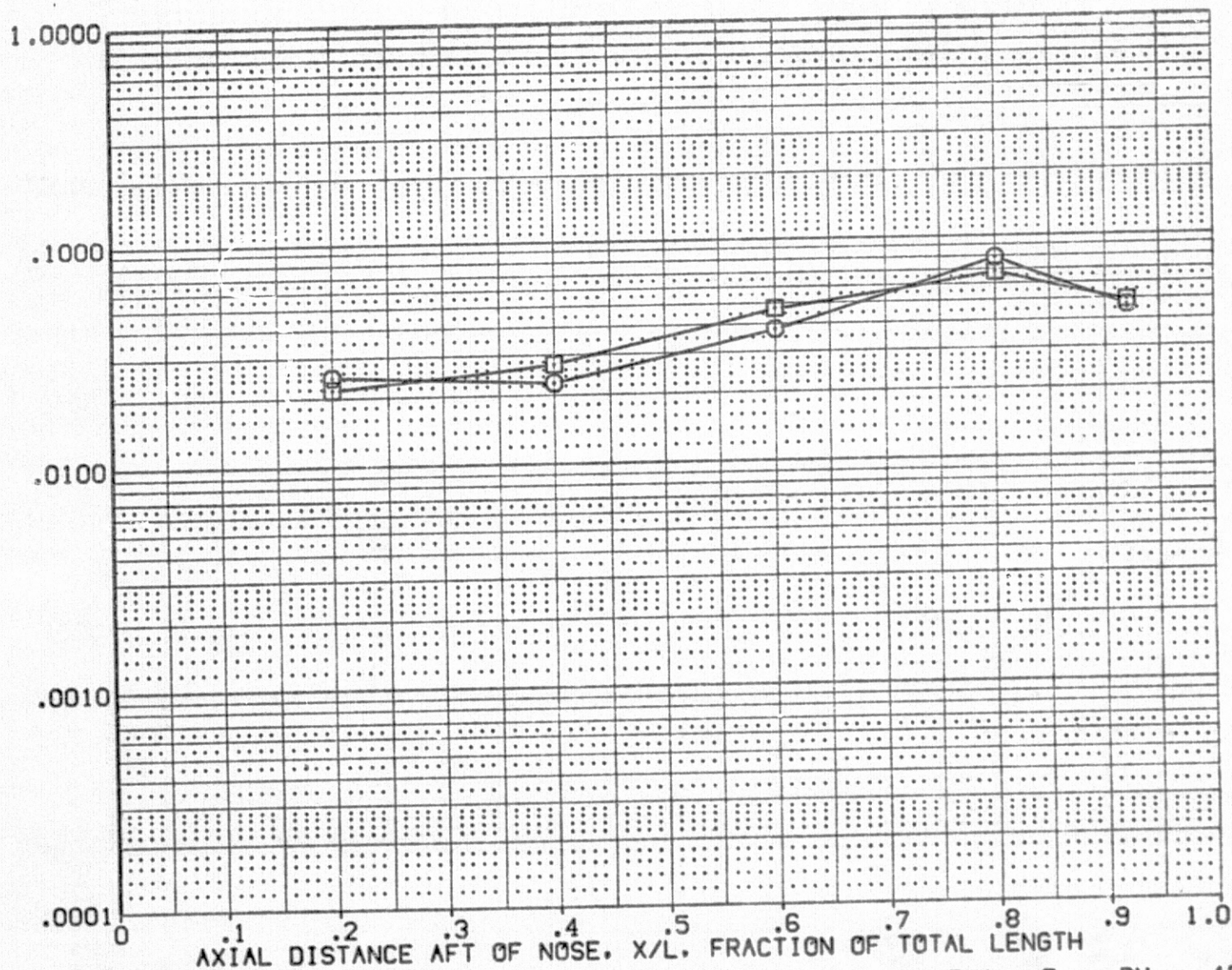


FIG. 57 INTEGRATED VEHICLE - SRB SURFACE RN VARIATION ALPHA = -5 DH = .175



# IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQS13)

SYMBOL	RN/L	PHI	HAW/HT		MACH	PARAMETRIC VALUES		
○	1.990	90.000	.900		BETA	3.700	ALPHA	.000
□	4.550					.000	DELTAH	.069

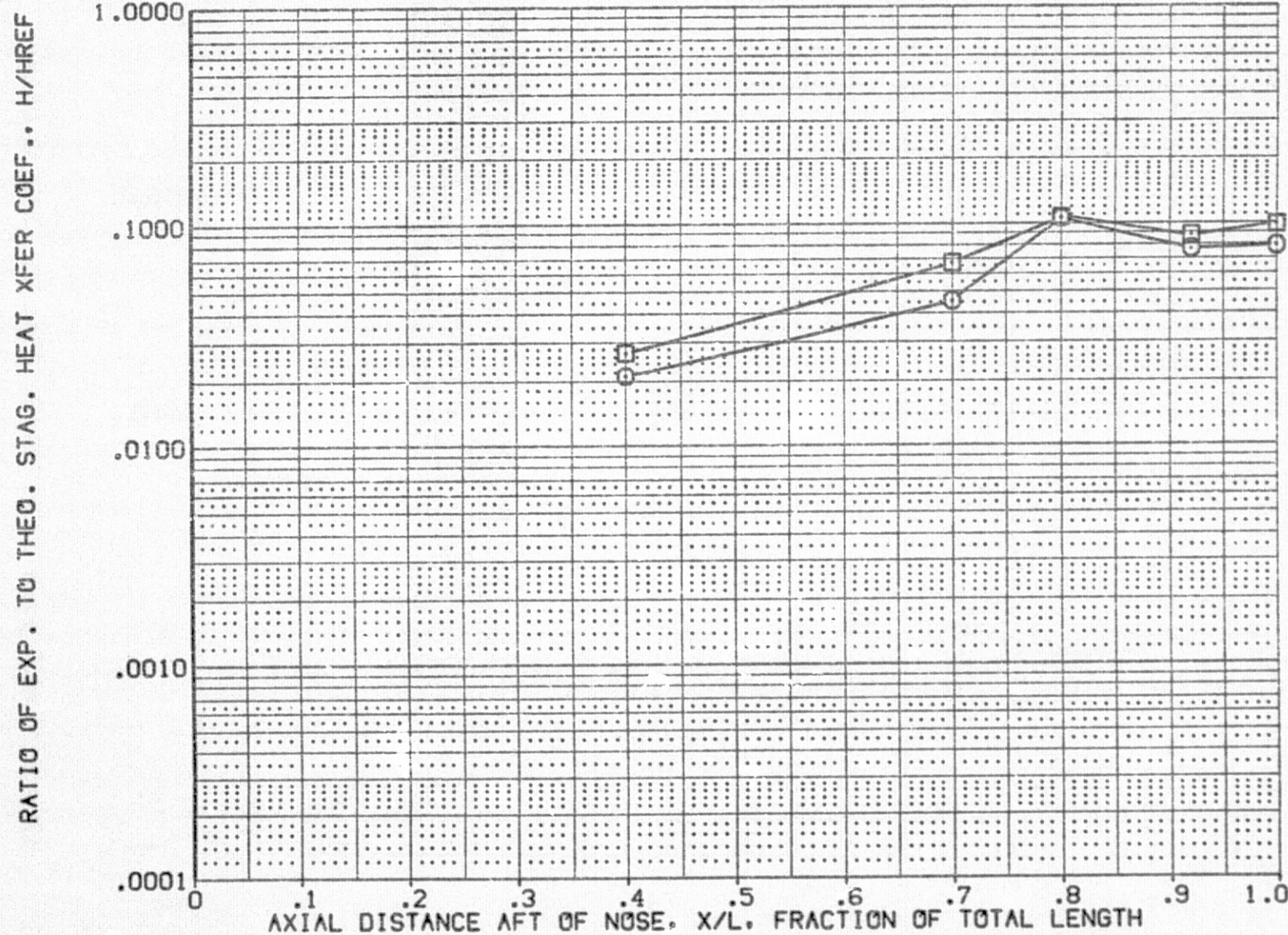


FIG. 58 INTEGRATED VEHICLE - SRB SURFACE RN VARIATION ALPHA = 0 DH = .069

# IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQS13)

SYMBOL  
 ○  
 □

RN/L  
 1.990  
 4.550

PHI  
 135.000

HAW/HT  
 .900

MACH  
 BETA

PARAMETRIC VALUES  
 3.700  
 .000

ALPHA  
 DELTAH

.000  
 .069

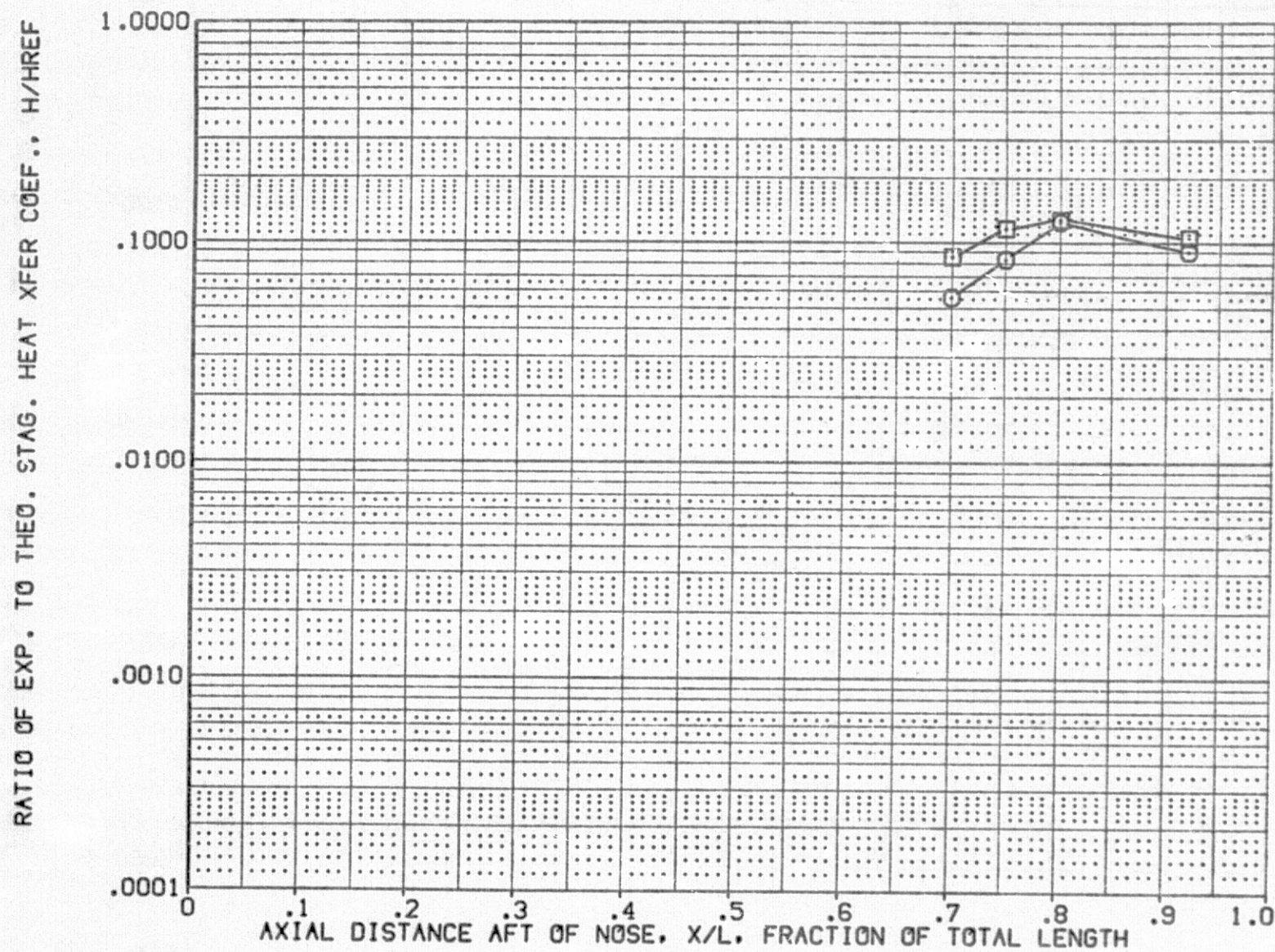


FIG. 58 INTEGRATED VEHICLE - SRB SURFACE RN VARIATION ALPHA = 0 DH = .069



# IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQS13)

SYMBOL    RN/L    PHI    HAV/HT  
 ○    1.990    180.000    .900  
 □    4.550

PARAMETRIC VALUES  
 MACH    3.700    ALPHA    .000  
 BETA    .000    DELTAH    .069

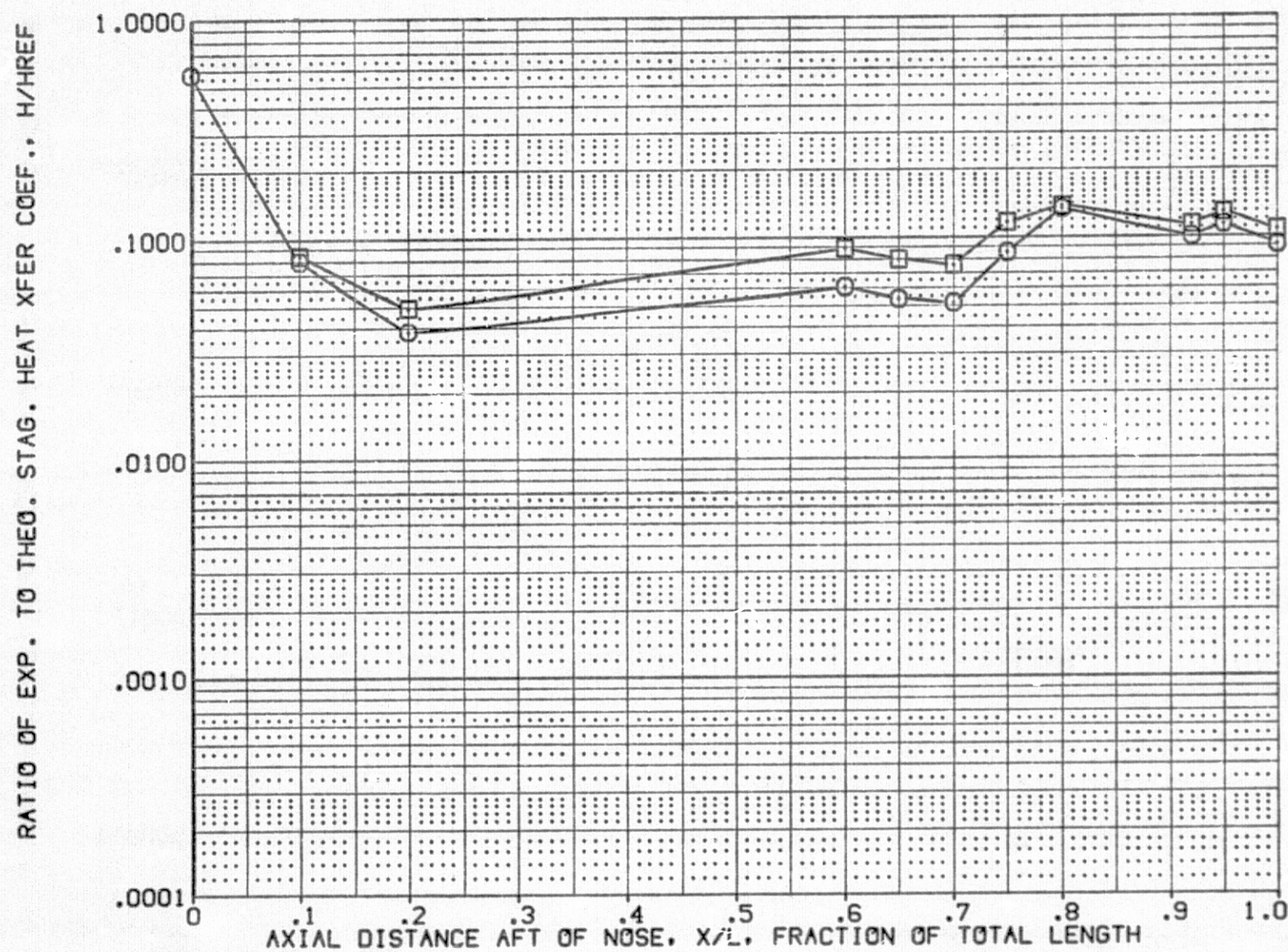


FIG. 58 INTEGRATED VEHICLE - SRB SURFACE RN VARIATION ALPHA = 0 DH = .069

# IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQS13)

SYMBOL	RN/L	PHI	HAW/HT
○	1.990	225.000	.900
□	4.550		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
ALPHA	.000
DELTAH	.069

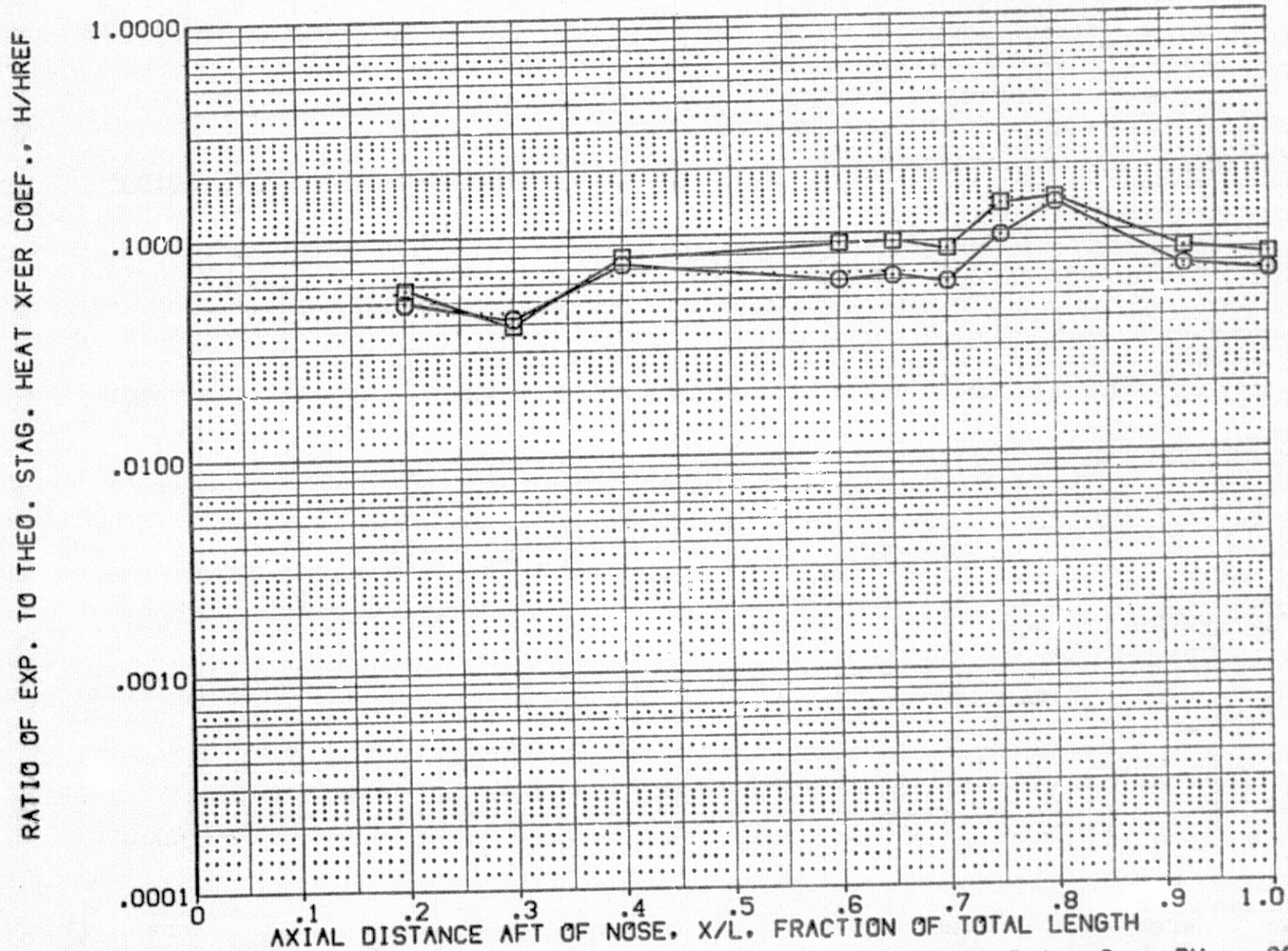


FIG. 58 INTEGRATED VEHICLE - SRB SURFACE RN VARIATION ALPHA = 0 DH = .069



# IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQS13)

SYMBOL    RN/L    PHI    HAW/HT  
 ○    1.990    270.000    .900  
 □    4.550

PARAMETRIC VALUES  
 MACH    3.700    ALPHA    .000  
 BETA    .000    DELTAH    .069

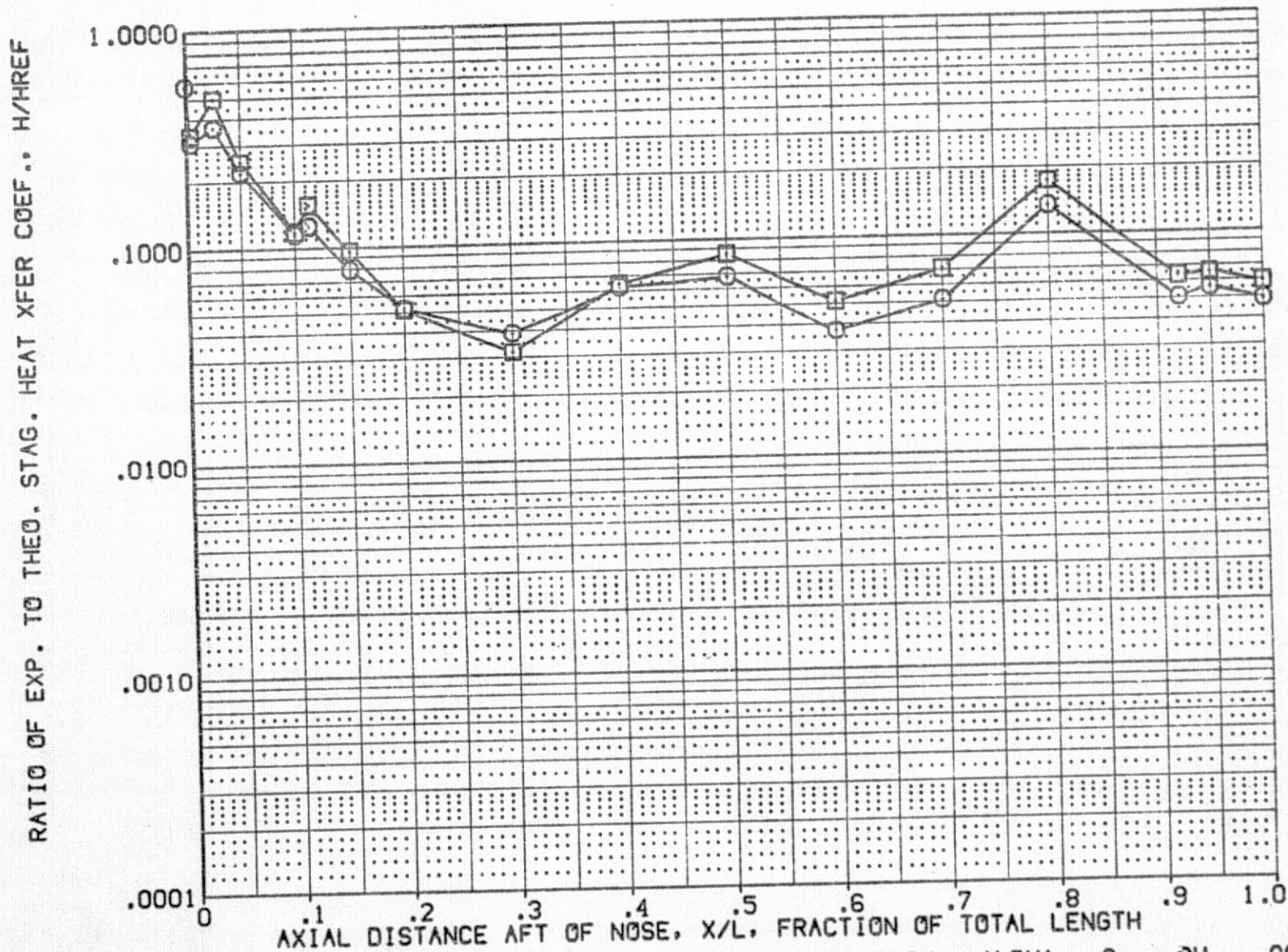


FIG. 58 INTEGRATED VEHICLE - SRB SURFACE RN VARIATION    ALPHA = 0    DH = .069

# IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQS13)

SYMBOL  
□ ○

RN/L  
1.990  
4.550

PHI  
315.000

HAV/HT  
.900

MACH  
BETA

PARAMETRIC VALUES

3.700

ALPHA

.000

.000

DELTAH

.069

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.  $H/H_{REF}$

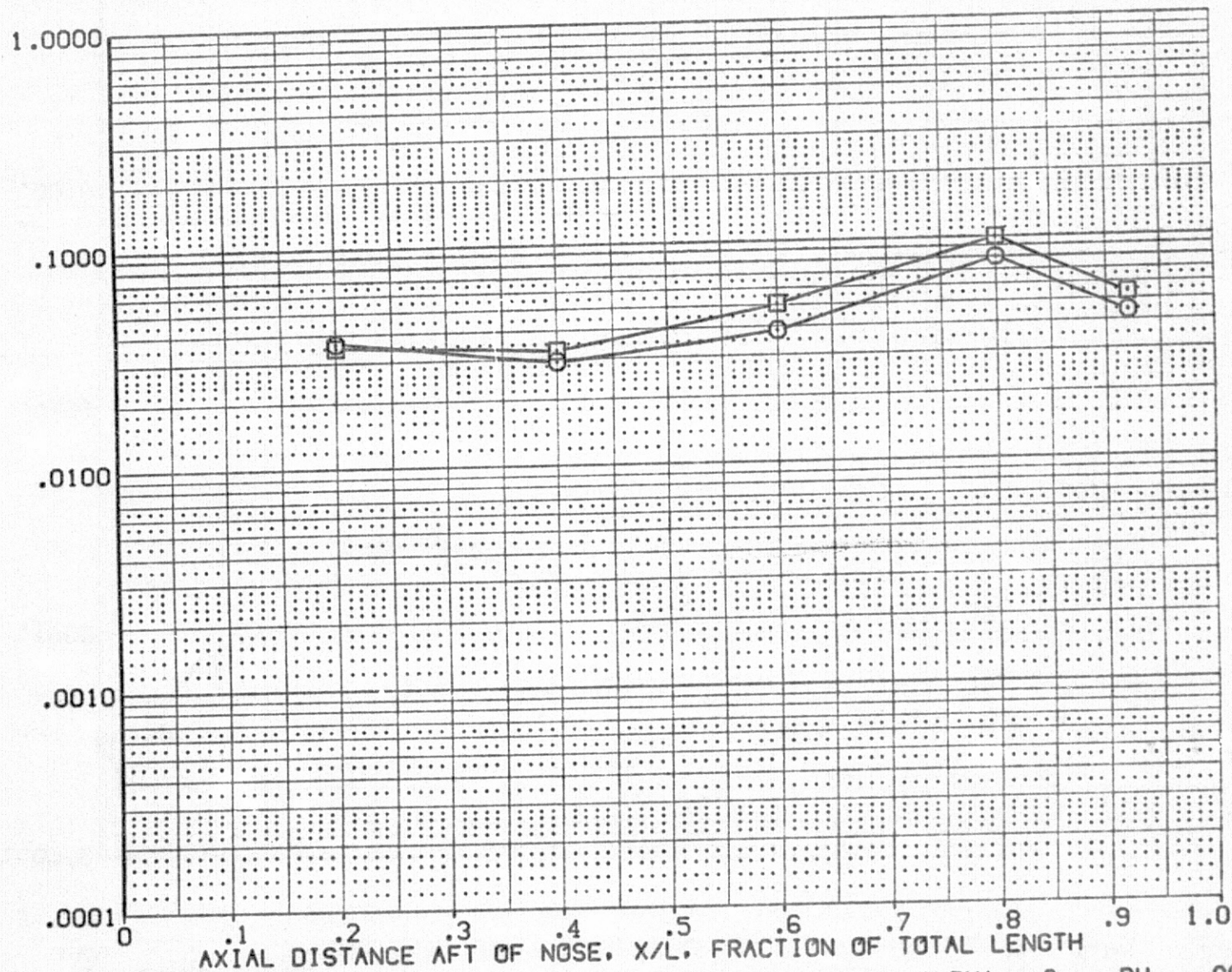


FIG. 58 INTEGRATED VEHICLE - SRB SURFACE RN VARIATION ALPHA = 0 DH = .069



# IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQS14)

SYMBOL	RN/L	PHI	HAW/HT		PARAMETRIC VALUES		
○	2.000	90.000	.900		MACH	3.700	ALPHA
□	4.470				BETA	.000	DELTAH
							-5.000
							.069

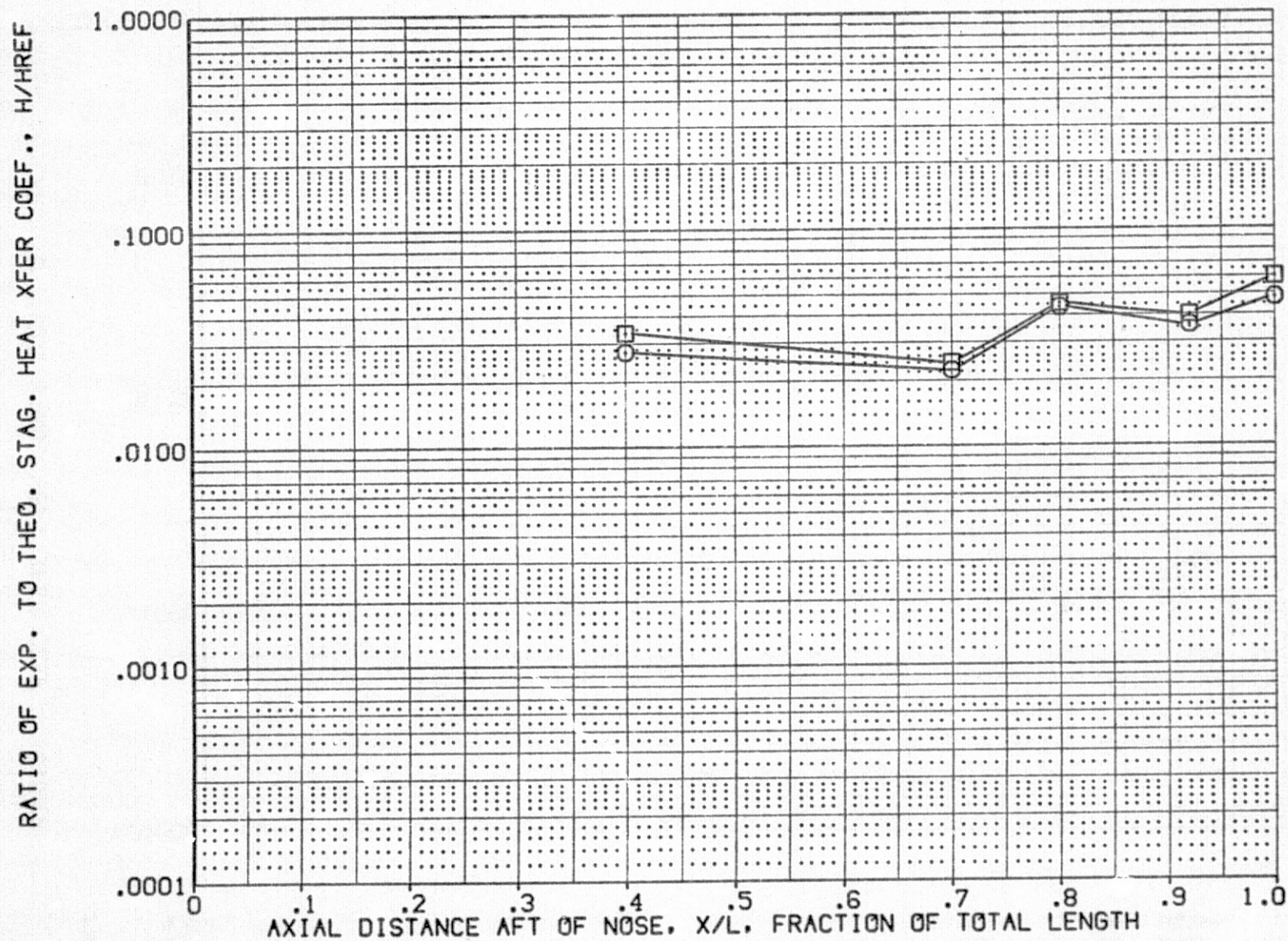


FIG. 59 INTEGRATED VEHICLE - SRB SURFACE RN VARIATION ALPHA = -5 DH = .069

## IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQS14)

SYMBOL	RN/L	PHI	HAW/HT
○	2.000	135.000	.900
□	4.470		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
ALPHA	-5.000
DELTAH	.069

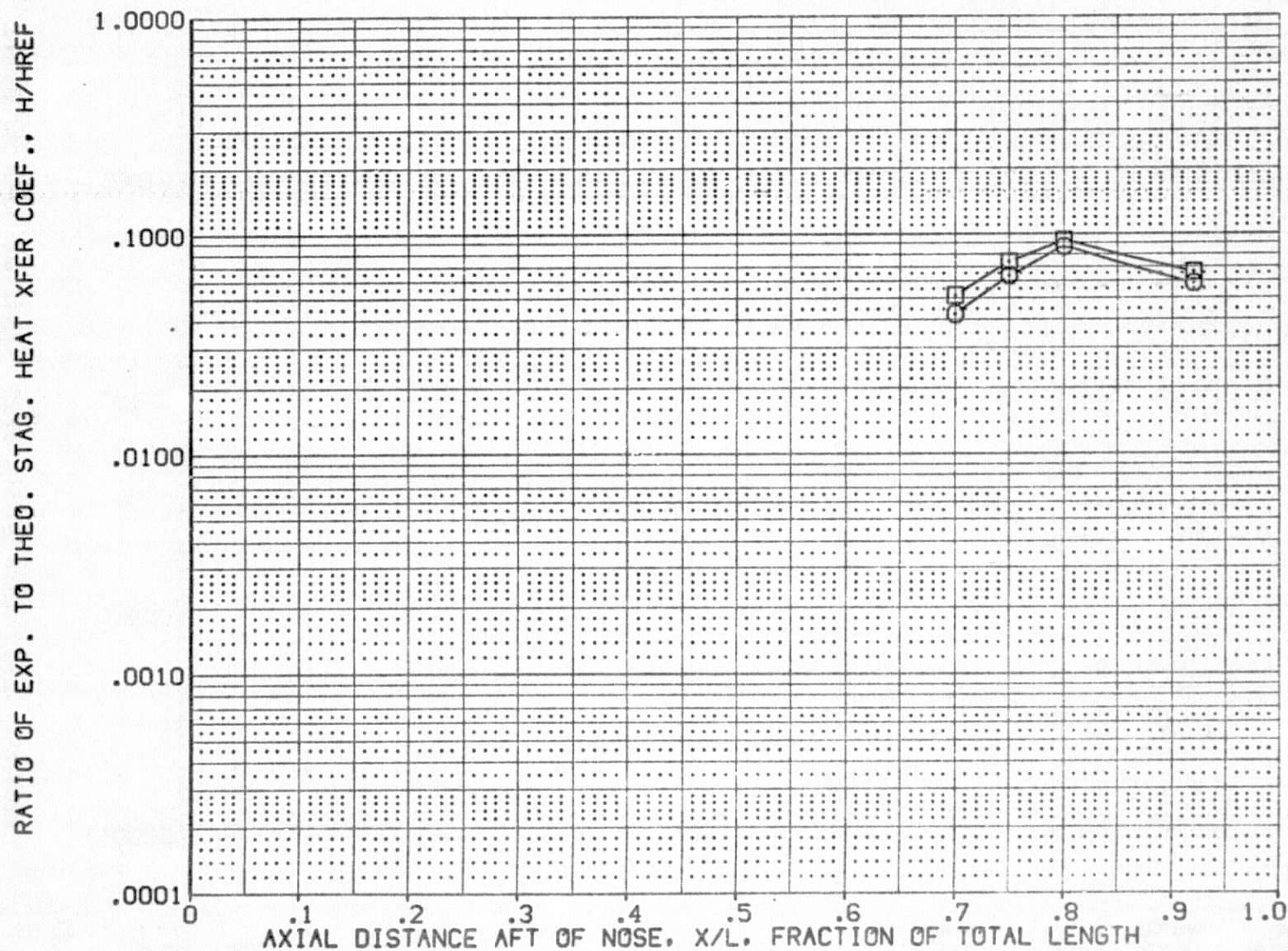


FIG. 59 INTEGRATED VEHICLE - SRB SURFACE RN VARIATION ALPHA = -5 DH = .069



# IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQS14)

SYMBOL	RN/L	PHI	HAW/HT		PARAMETRIC VALUES		
○	2.000	180.000	.900		MACH	3.700	ALPHA
□	4.470				BETA	.000	DELTAH
							-5.000
							.069

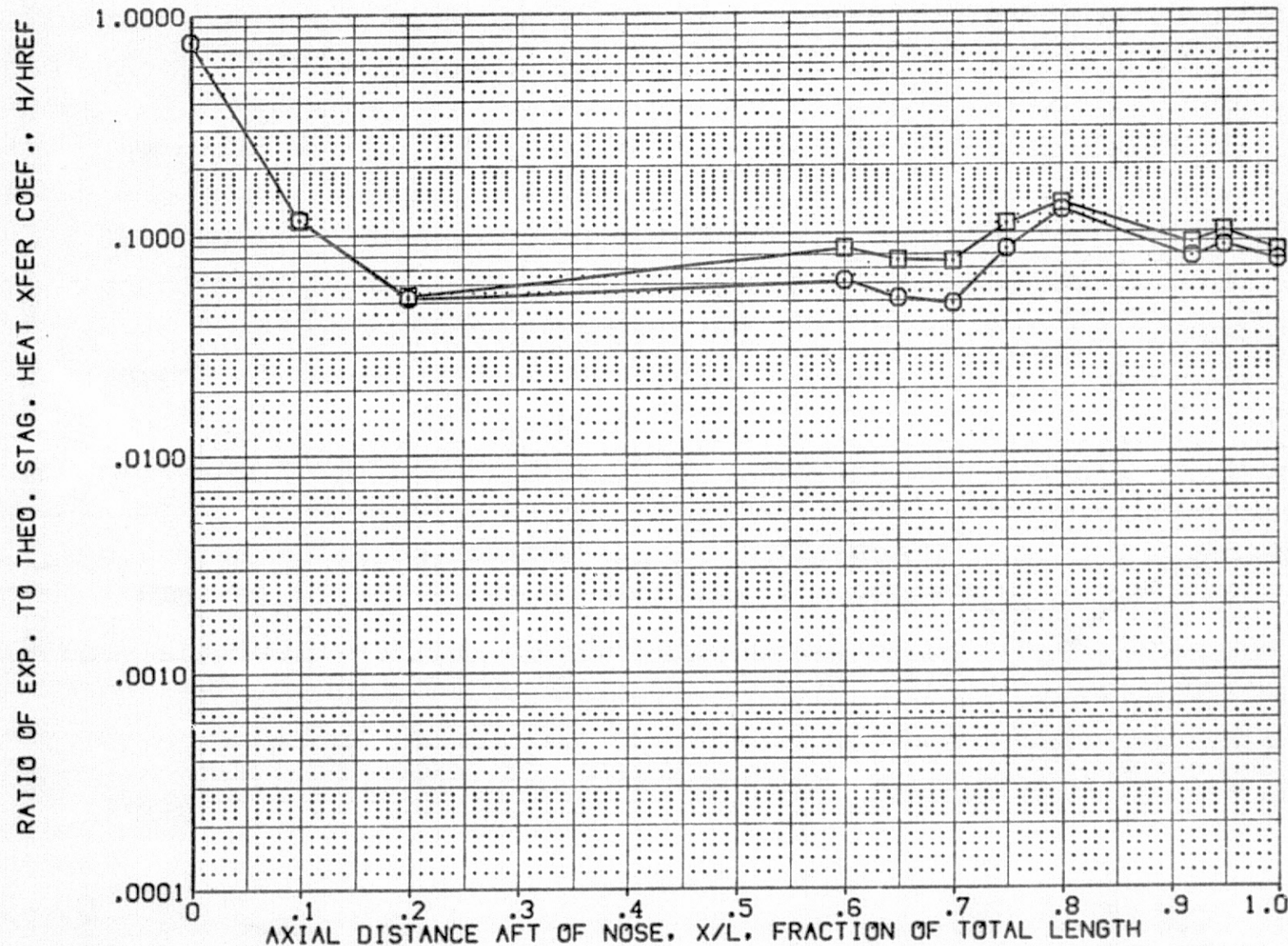


FIG. 59 INTEGRATED VEHICLE - SRB SURFACE RN VARIATION ALPHA = -5 DH = .069

# IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQS14)

SYMBOL	RN/L	PHI	HAW/HT
○	2.000	225.000	.900
□	4.470		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	-5.000
BETA	.000	DELTAH	.069

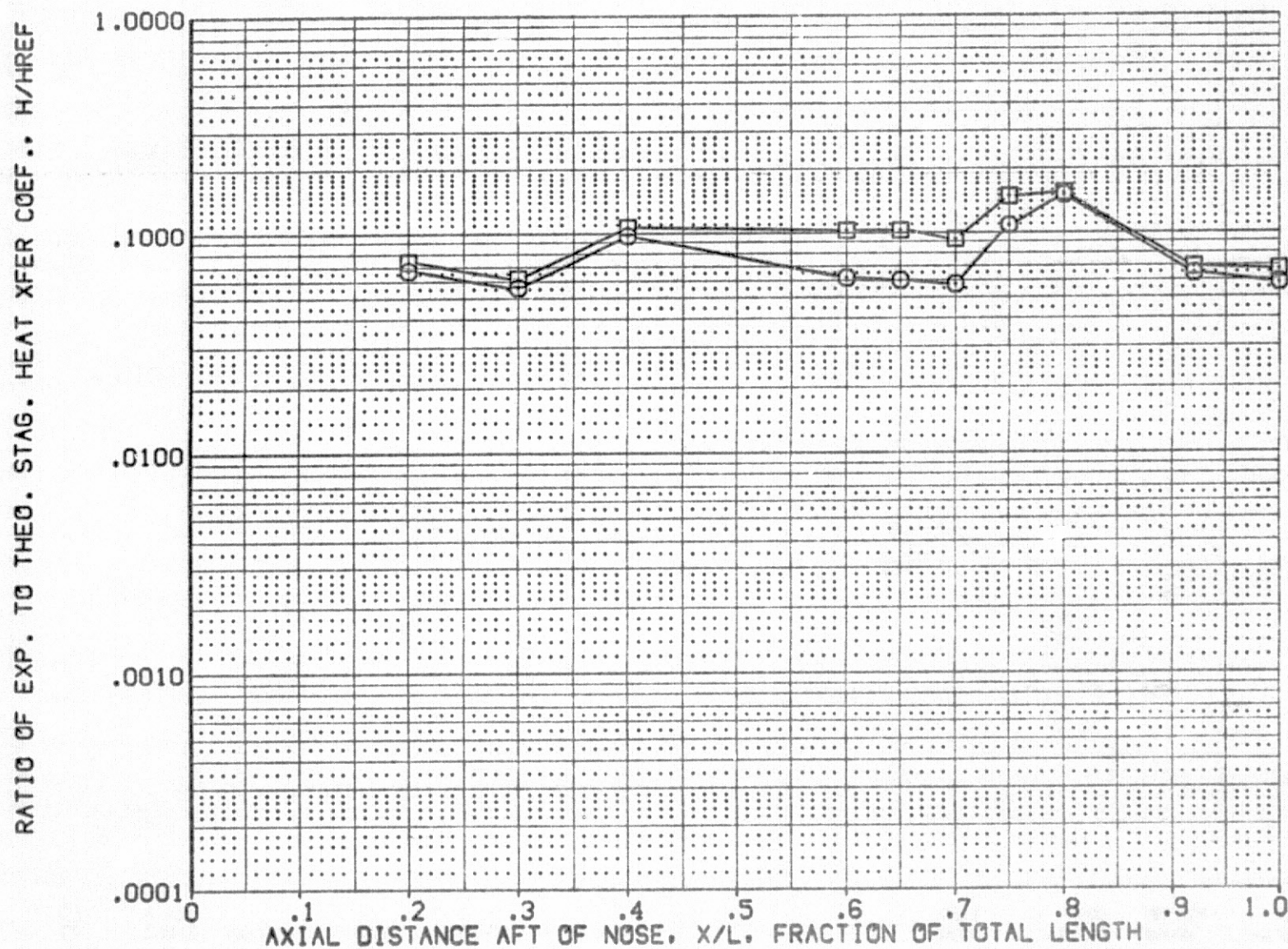


FIG. 59 INTEGRATED VEHICLE - SRB SURFACE RN VARIATION ALPHA = -5 DH = .069



# IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQS14)

SYMBOL  
 ○  
 □

RN/L  
 2.000  
 4.470

PHI  
 270.000

HAV/HT  
 .900

PARAMETRIC VALUES  
 MACH 3.700  
 BETA .000  
 ALPHA -5.000  
 DELTAH .069

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

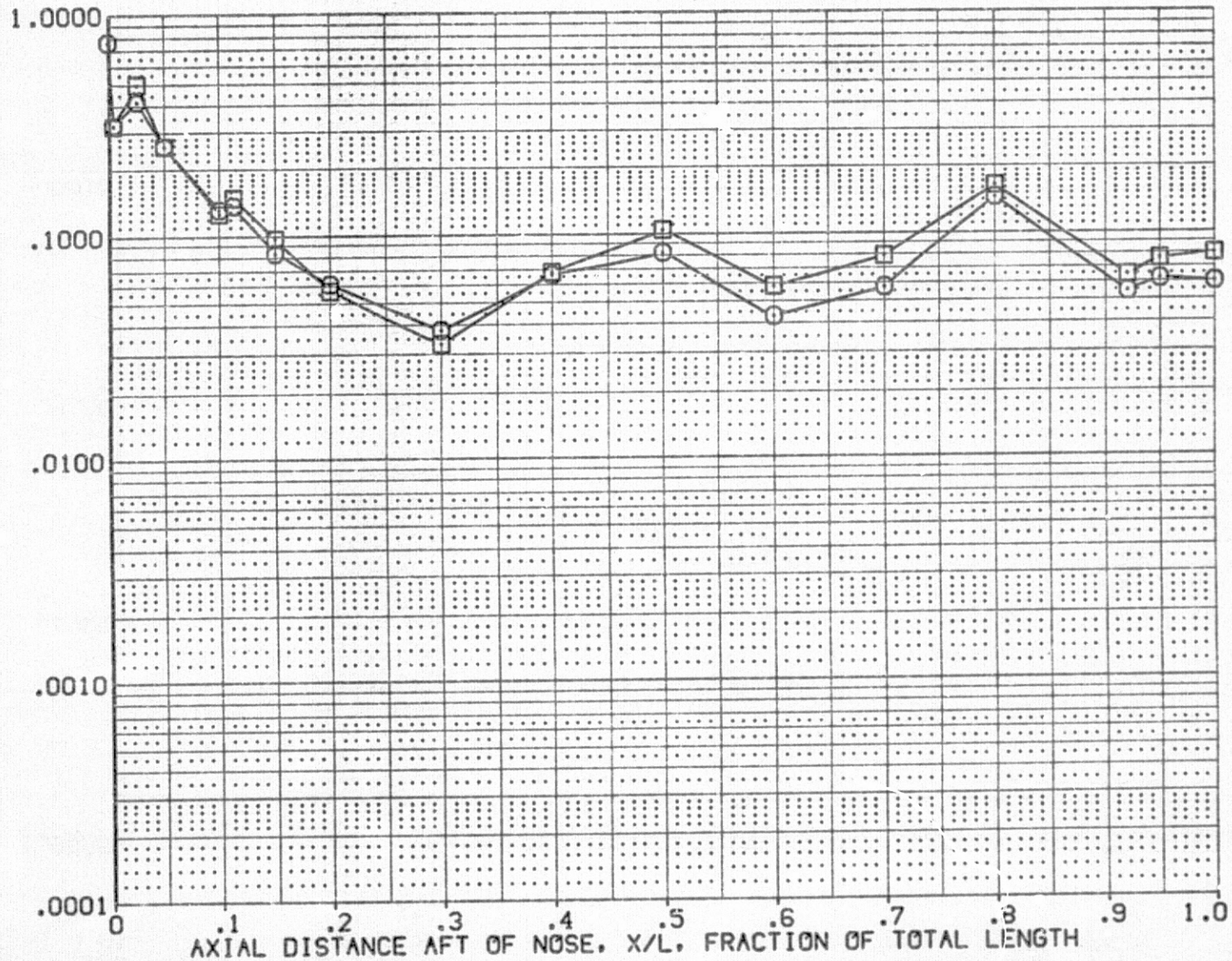


FIG. 59 INTEGRATED VEHICLE - SRB SURFACE RN VARIATION ALPHA = -5 DH = .069

# IH16 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE (CPQS14)

SYMBOL □	RN/L	PHI	HAW/HT	MACH BETA	PARAMETRIC VALUES		
	2.000	315.000	.900		3.700	ALPHA	-5.000
	4.470				.000	DELTAH	.069

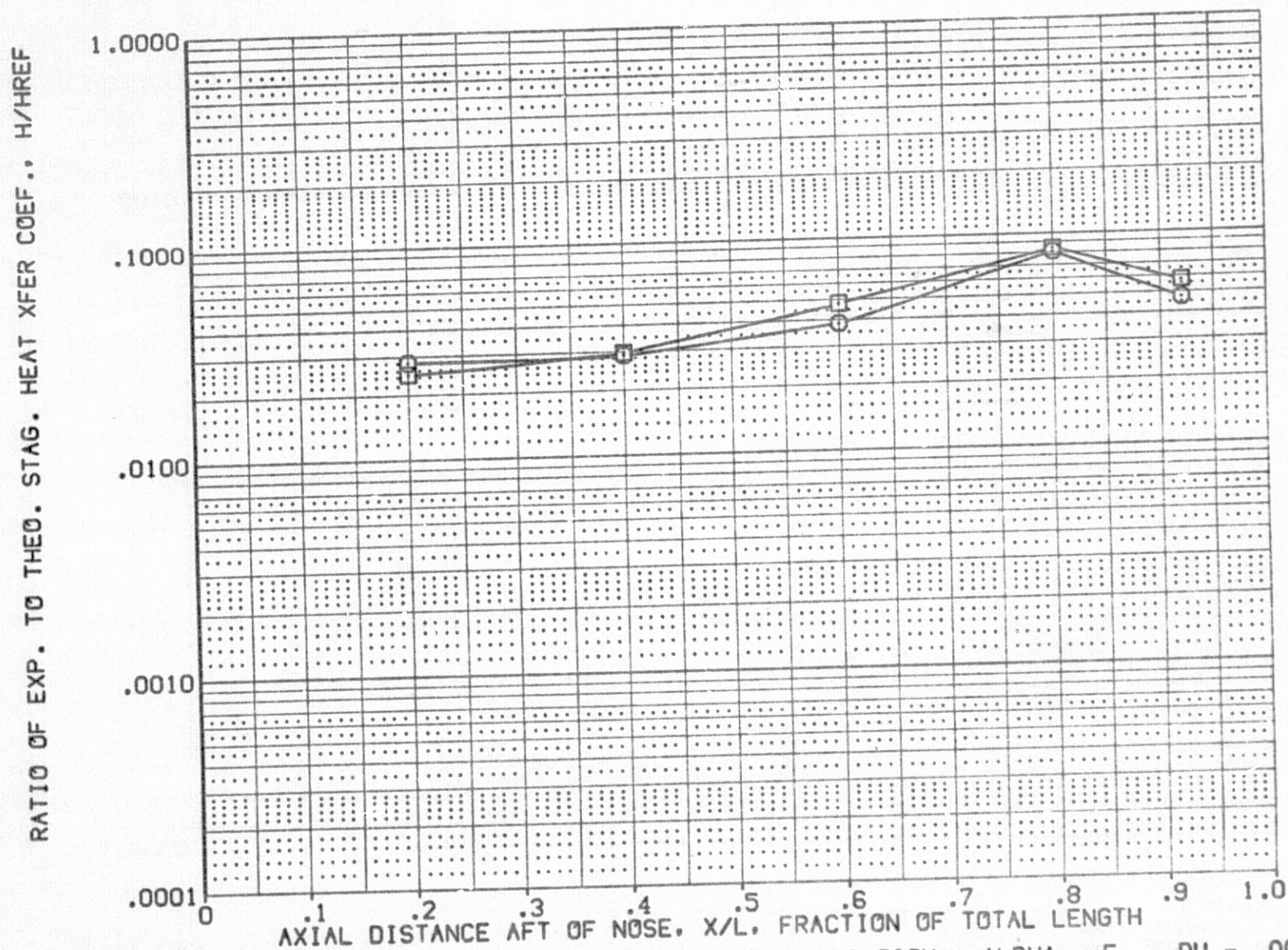


FIG. 59 INTEGRATED VEHICLE - SRB SURFACE RN VARIATION ALPHA = -5 DH = .069





IH16 089B+T8+S6+GRIT SRB

(CPQS15)

SYMBOL	RN/L	PHI	HAV/HT
○	1.890	90.000	.900
□	4.620		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175
GRITNO	25.000		

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

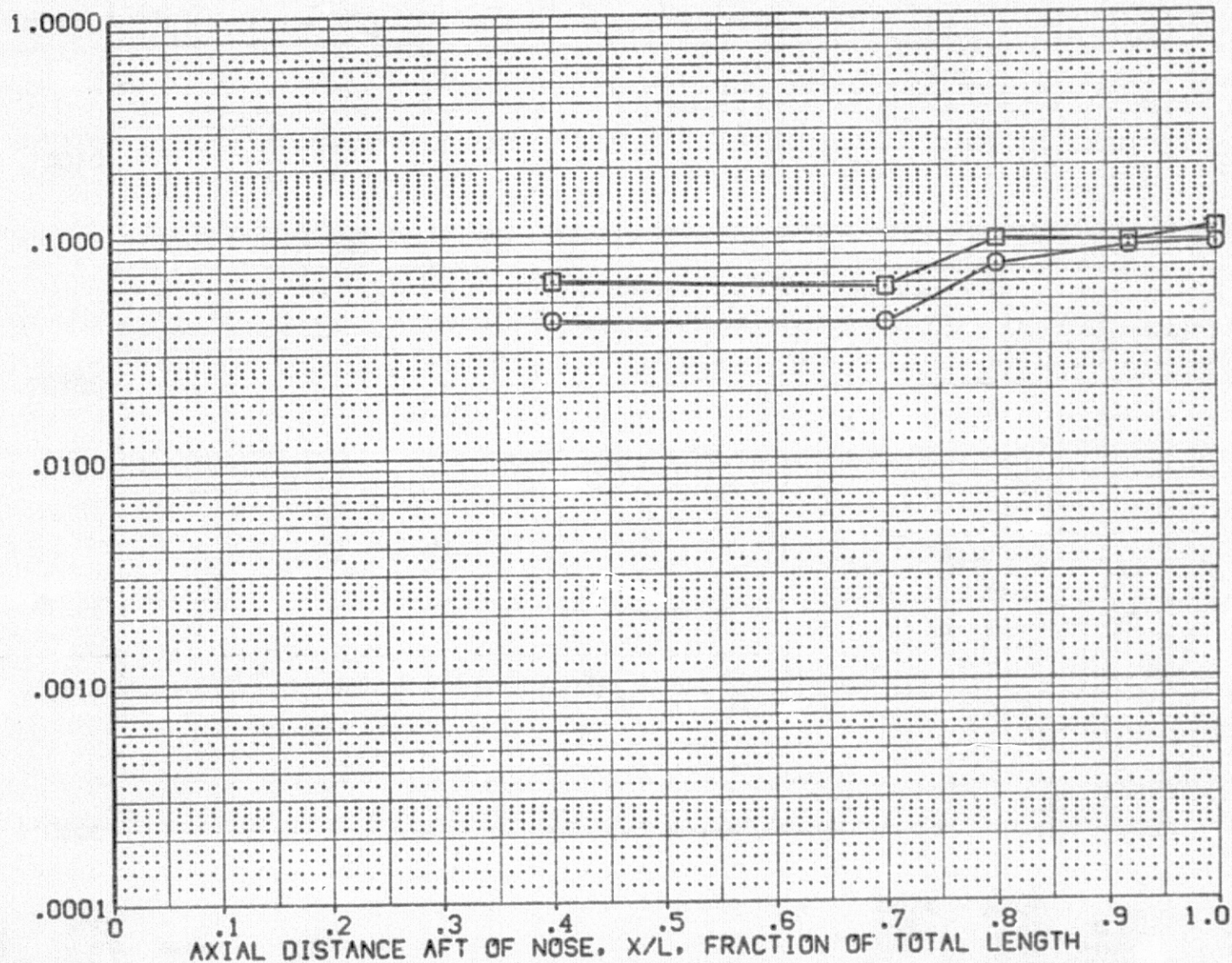


FIG. 60 INTEGRATED VEHICLE - SRB SURFACE RN VARIATION WITH GRIT

SYMBOL	RN/L	PHI	HAW/HT
○	1.890	135.000	.900
□	4.620		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTA	.175
GRITNO	25.000		

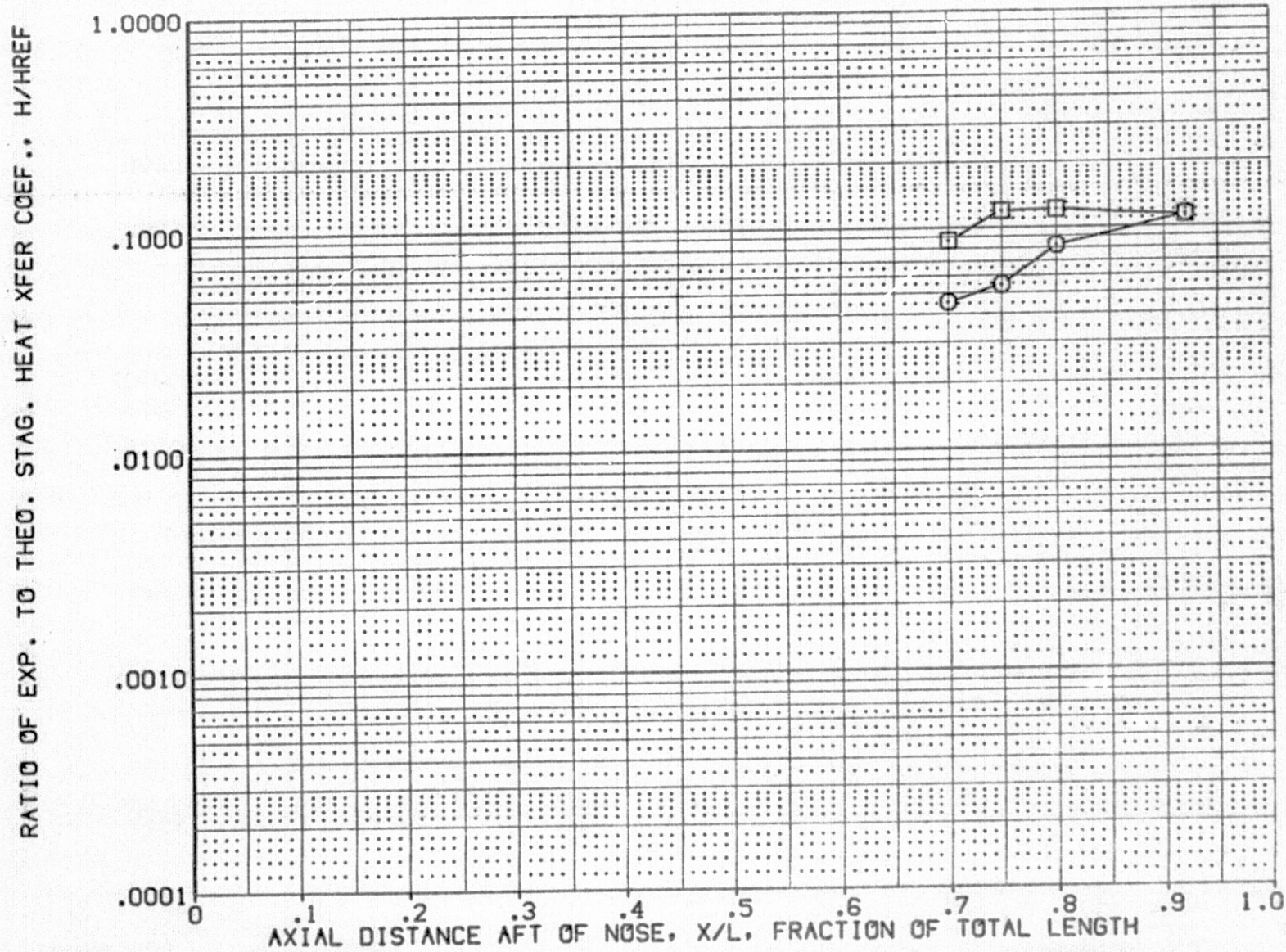


FIG. 60 INTEGRATED VEHICLE - SRB SURFACE RN VARIATION WITH GRIT



IH16 089B+T8+S6+GRIT SRB

(CPQS15)

SYMBOL	RN/L	PHI	HAV/HT
○	1.890	180.000	.900
□	4.620		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175
GRITNO	25.000		

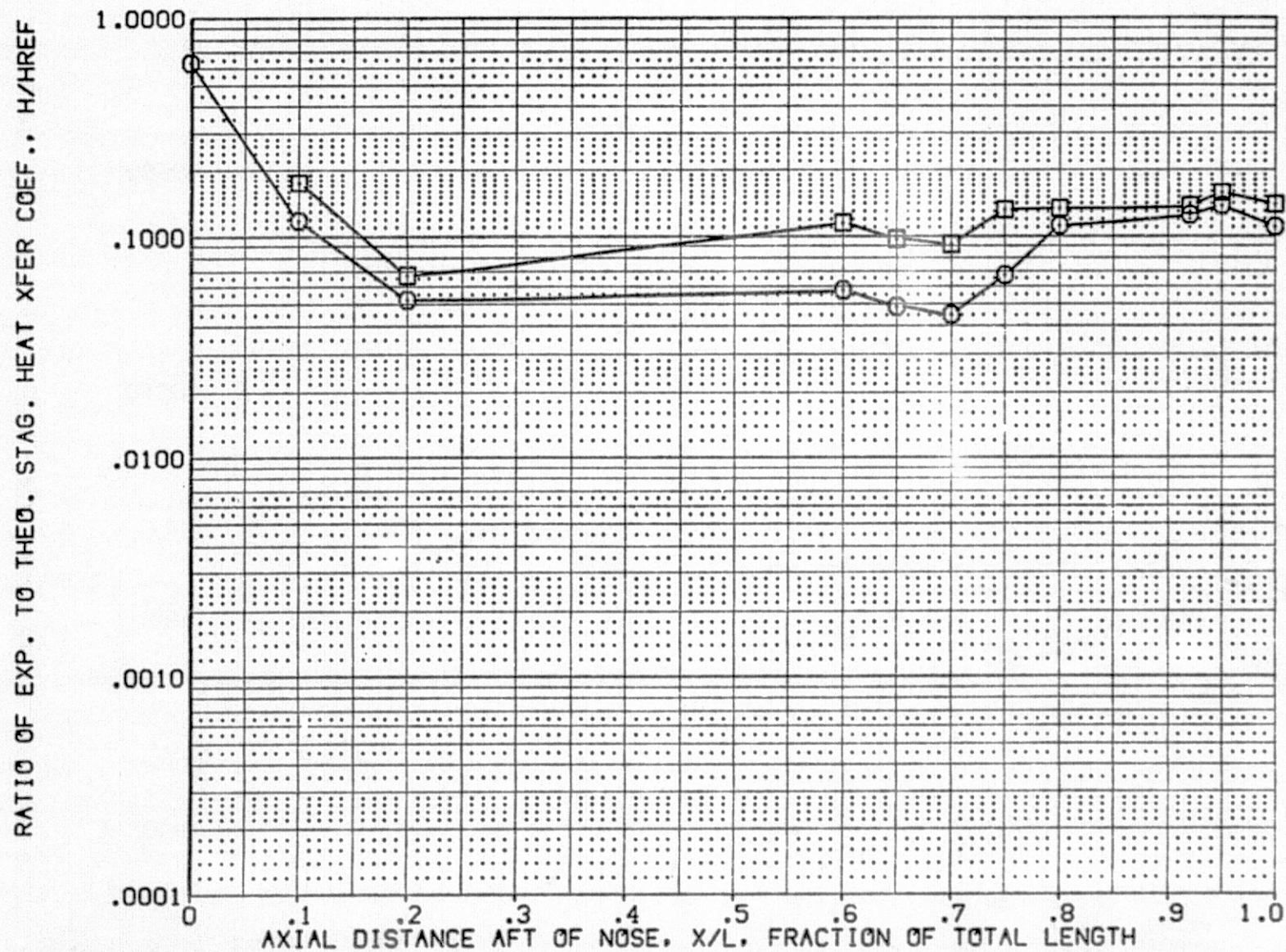


FIG. 60 INTEGRATED VEHICLE - SRB SURFACE RN VARIATION WITH GRIT

IH16 089B+T8+S6+GRIT SRB

(CPQS15)

SYMBOL	RN/L	PHI	HAV/HT
□	1.890	225.000	.900
○	4.620		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTA	.175
GRITNO	25.000		

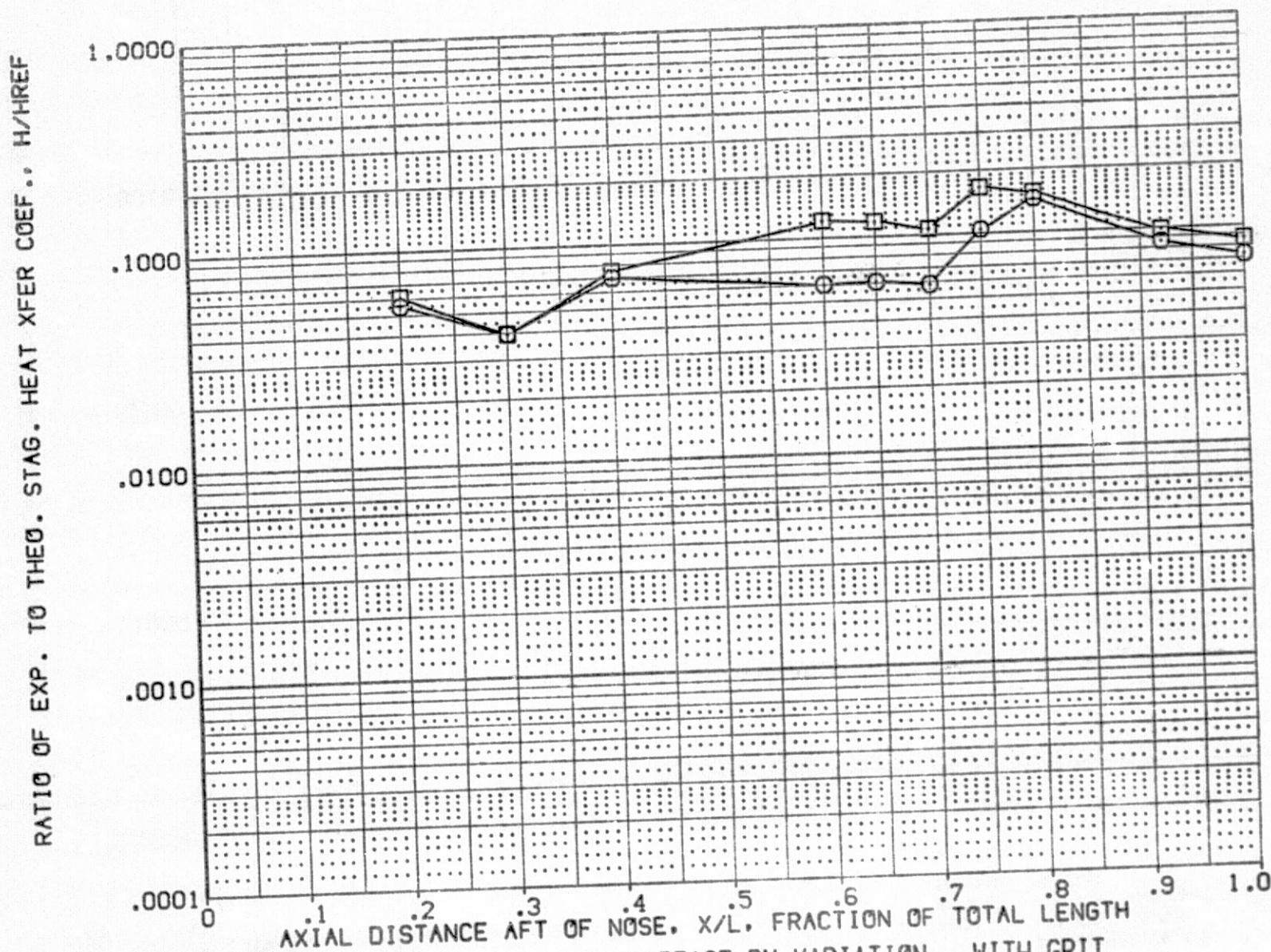


FIG. 60 INTEGRATED VEHICLE - SRB SURFACE RN VARIATION WITH GRIT



IH16 089B+T8+S6+GRIT SRB

(CPQS15)

SYMBOL	RN/L	PHI	HAV/HT
○	1.890	270.000	.900
□	4.620		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175
GRITNO	25.000		

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

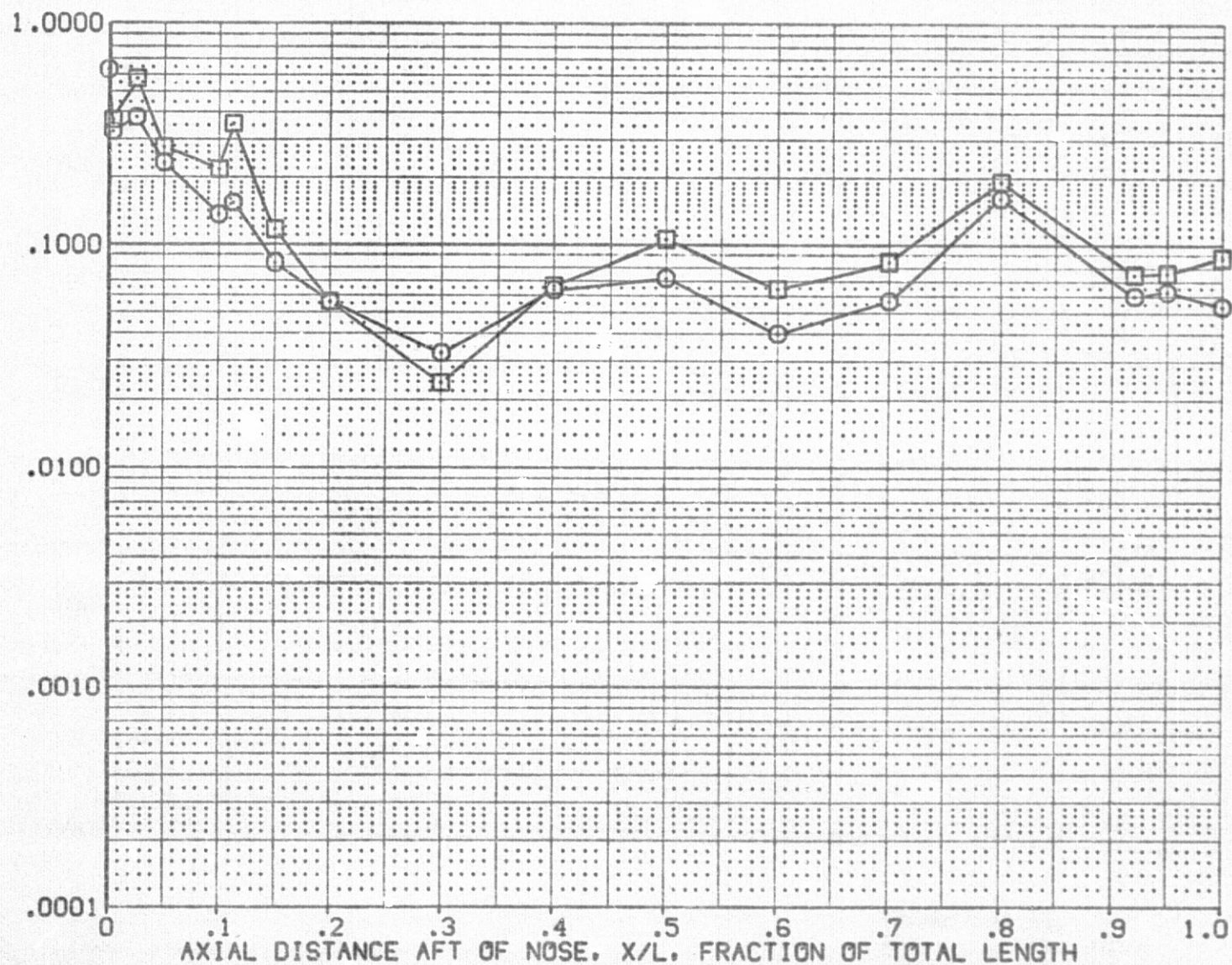


FIG. 60 INTEGRATED VEHICLE - SRB SURFACE RN VARIATION WITH GRIT

IH16 089B+T8+S6+GRIT SRB

(CPQS15)

SYMBOL	RN/L	PHI	HAW/HT
○	1.890	315.000	.900
□	4.620		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	DELTAH	.175
GRITNO	25.000		

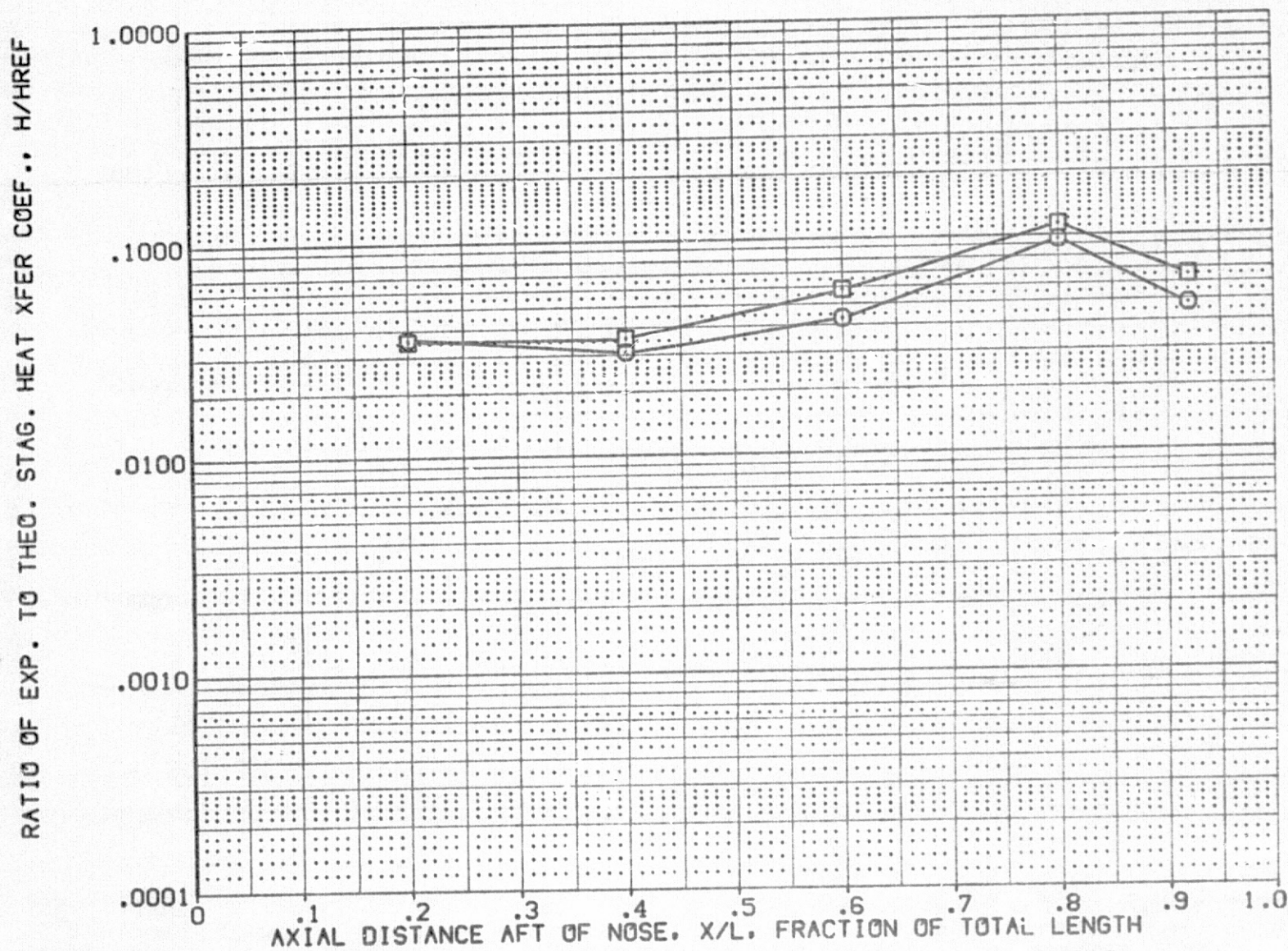


FIG. 60 INTEGRATED VEHICLE - SRB SURFACE RN VARIATION WITH GRIT



IH16

S6

## SOLID ROCKET BOOSTER SURFACE (CPQS05)

SYMBOL

RN/L

PHI

HAW/HT

PARAMETRIC VALUES

○  
□1.930  
4.620

90.000

.900

MACH  
BETA3.700  
.000

ALPHA

.000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

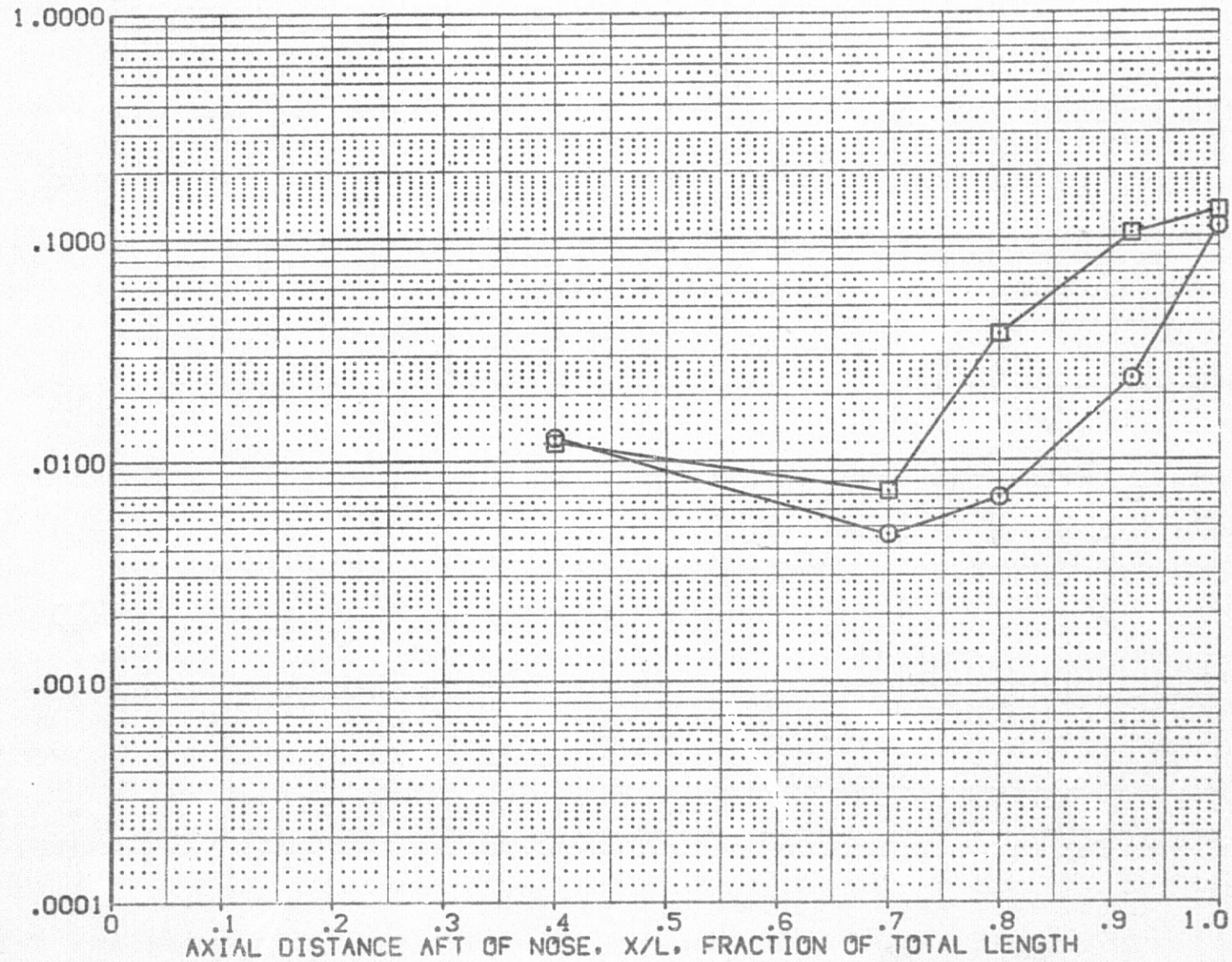


FIG. 61 SRB ALONE

RN VARIATION ALPHA = 0

IH16 S6

## SOLID ROCKET BOOSTER SURFACE (CPQS05)

SYMBOL	RN/L	PHI	HAW/HT
○	1.930	135.000	.900
□	4.620		

PARAMETRIC VALUES		
MACH	3.700	ALPHA
BETA	.000	.000

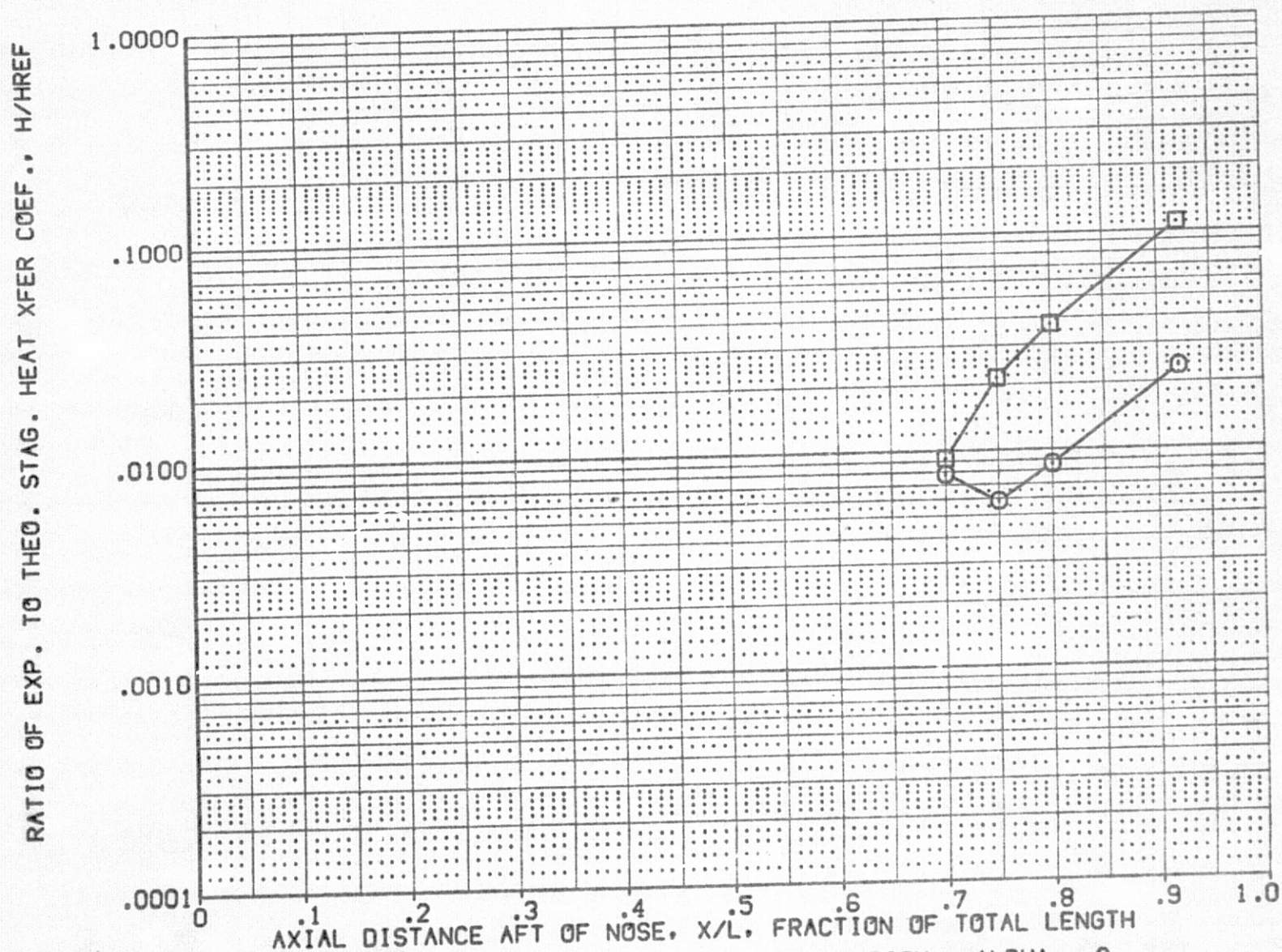


FIG. 61 SRB ALONE

RN VARIATION ALPHA = 0





IH16 S6 SOLID ROCKET BOOSTER SURFACE (CPQS05)

SYMBOL	RN/L	PHI	HAY/HT	MACH	PARAMETRIC VALUES	
○	1.930	180.000	.900	BETA	3.700	ALPHA
□	4.620				.000	.000

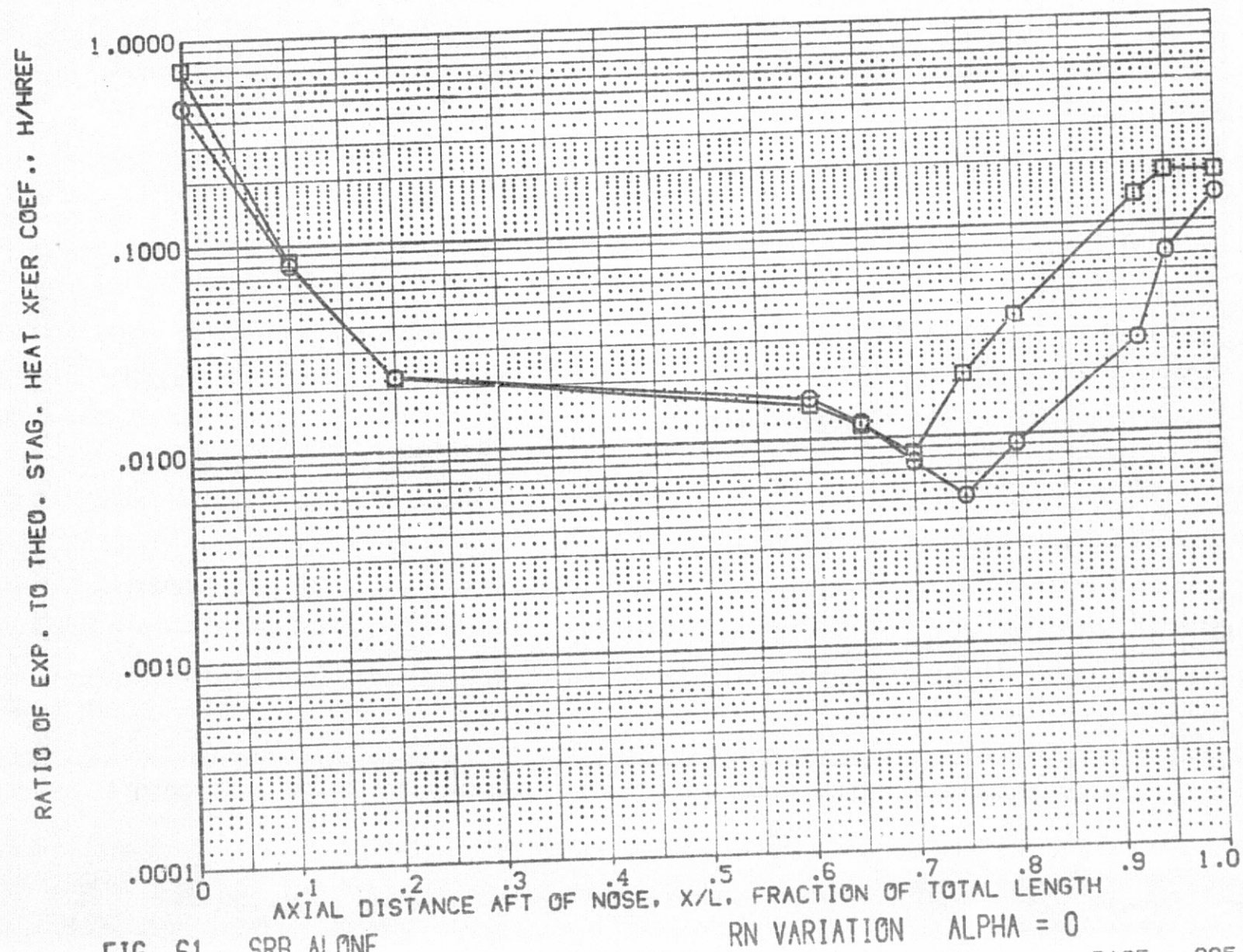


FIG. 61 SRB ALONE

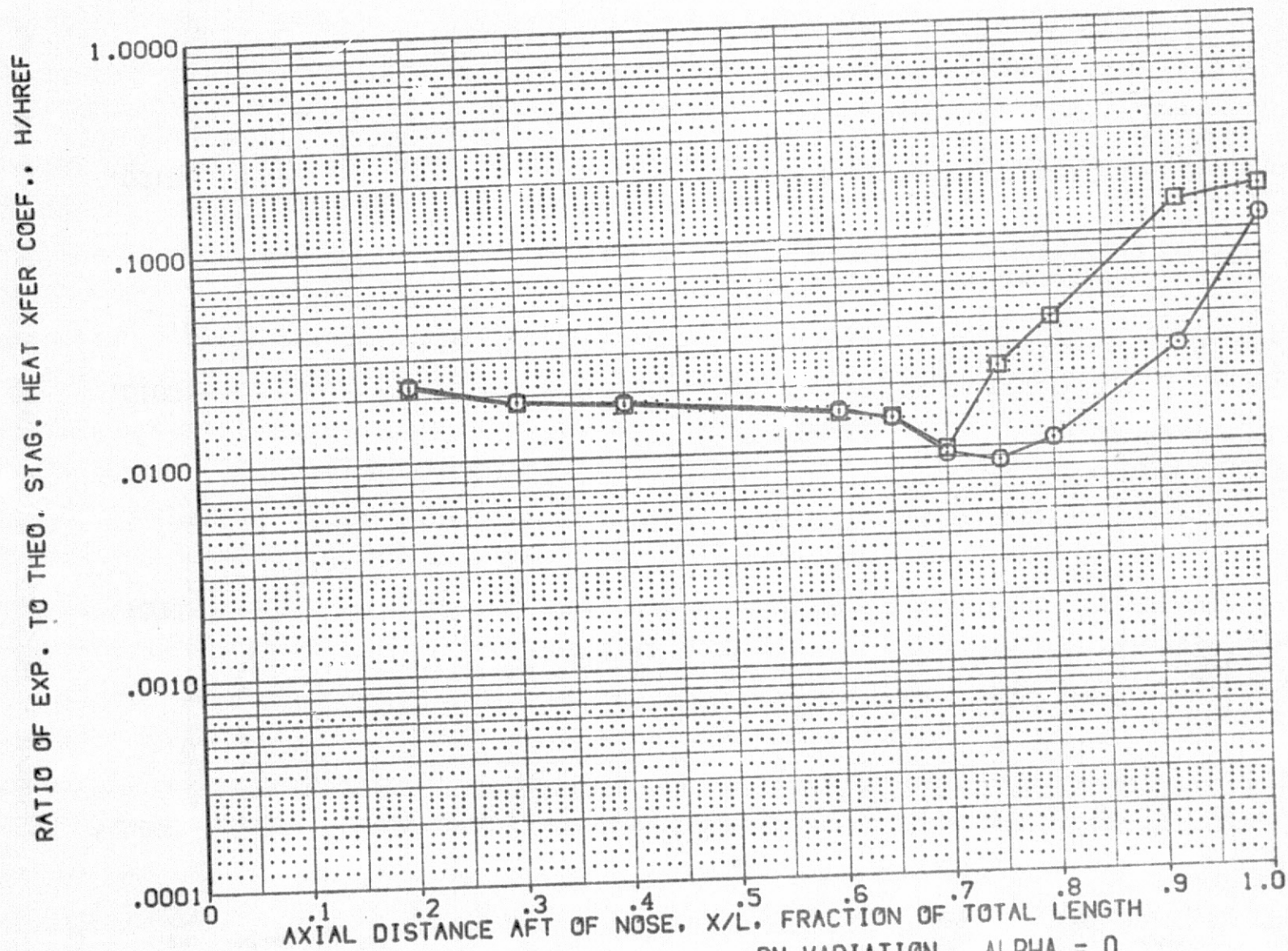


FIG. 61 SRB ALONE

RN VARIATION ALPHA = 0



IH16

S6

## SOLID ROCKET BOOSTER SURFACE (CPQS05)

SYMBOL	RN/L	PHI	HAW/HT
○	1.930	270.000	.900
□	4.620		

PARAMETRIC VALUES		
MACH	BETA	ALPHA
3.700	.000	.000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF



FIG. 61 SRB ALONE

RN VARIATION ALPHA = 0

# SOLID ROCKET BOOSTER SURFACE (CPQS05)

IH16 S6

SYMBOL RV/L PHI HAV/HT  
 □ 1.930 315.000 .900  
 □ 4.620

PARAMETRIC VALUES  
 3.700 ALPHA .000  
 MACH BETA

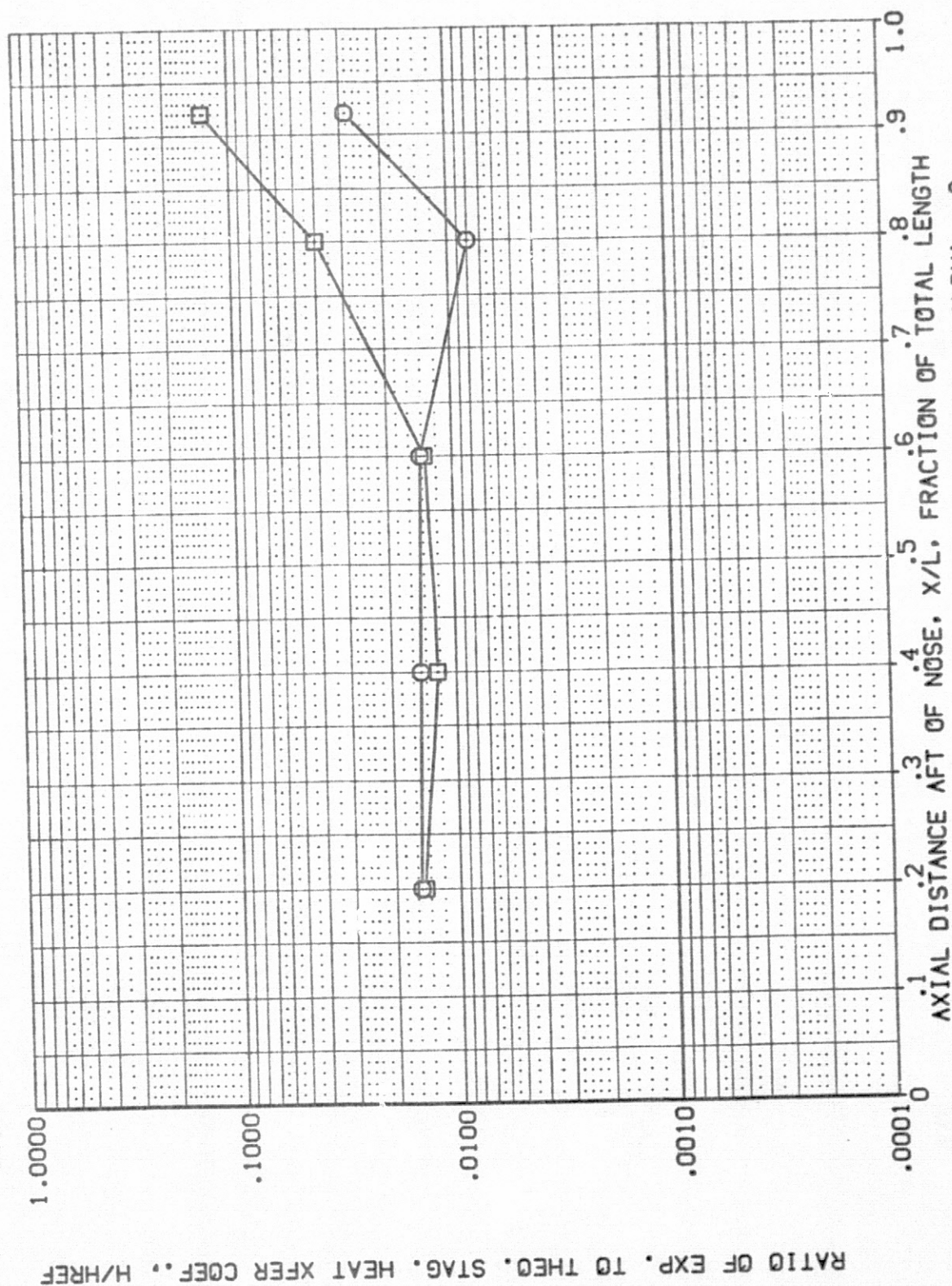


FIG. 61 SRB ALONE

RN VARIATION ALPHA = 0



IH16 S6

## SOLID ROCKET BOOSTER SURFACE (CPQS06)

SYMBOL	RN/L	PHI	HAW/HT
○	1.930	90.000	.900
□	4.600		

ACH  
BETA

PARAMETRIC VALUES

3.700  
.000

ALPHA

-5.000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

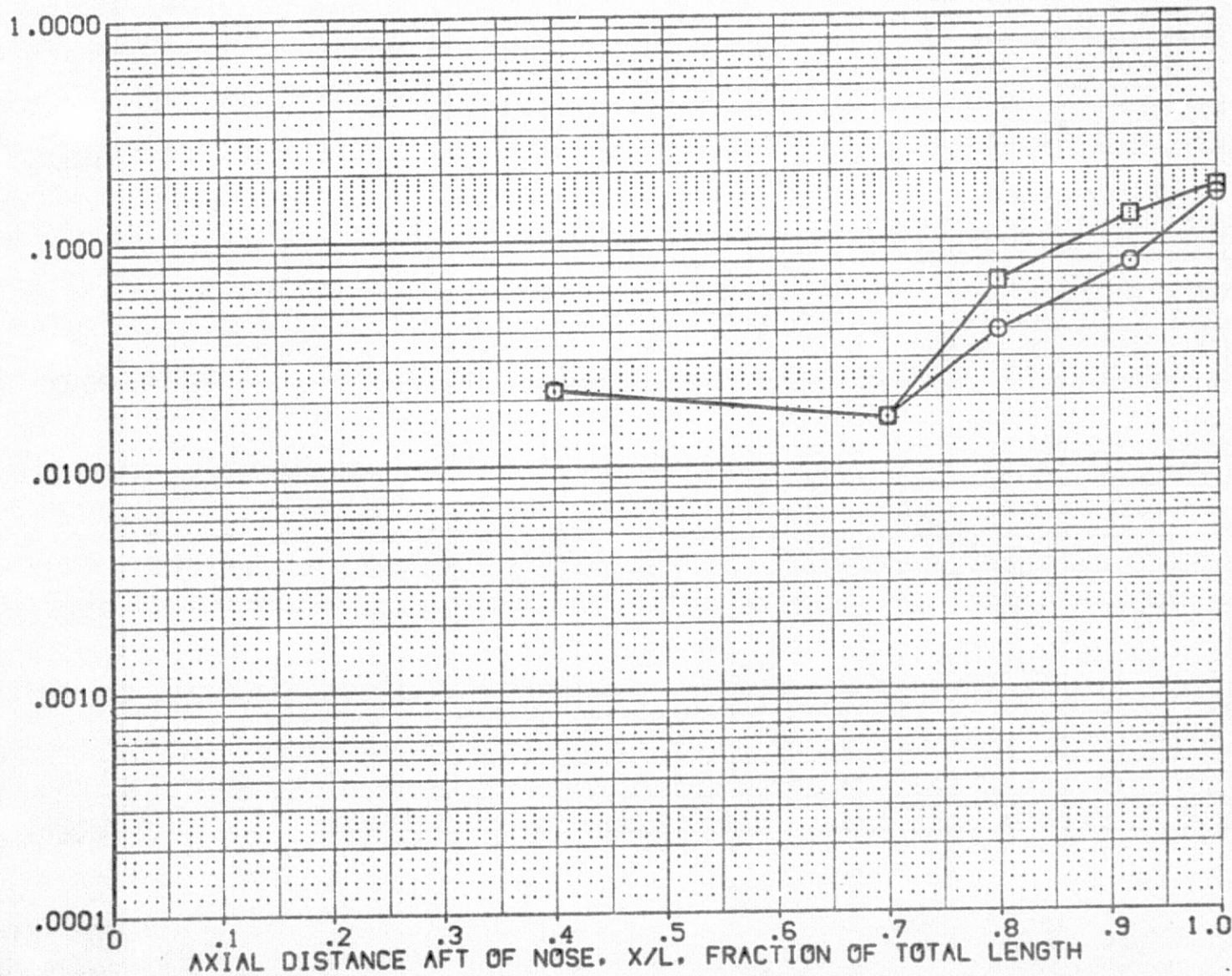


FIG. 62 SRB ALONE

RN VARIATION ALPHA = -5

IH16 S6

## SOLID ROCKET BOOSTER SURFACE (CPQS06)

SYMBOL	RN/L	PHI	HAW/HT
○	1.930	135.000	.900
□	4.600		

MACH  
BETAPARAMETRIC VALUES  
3.700 ALPHA  
.000

-5.000

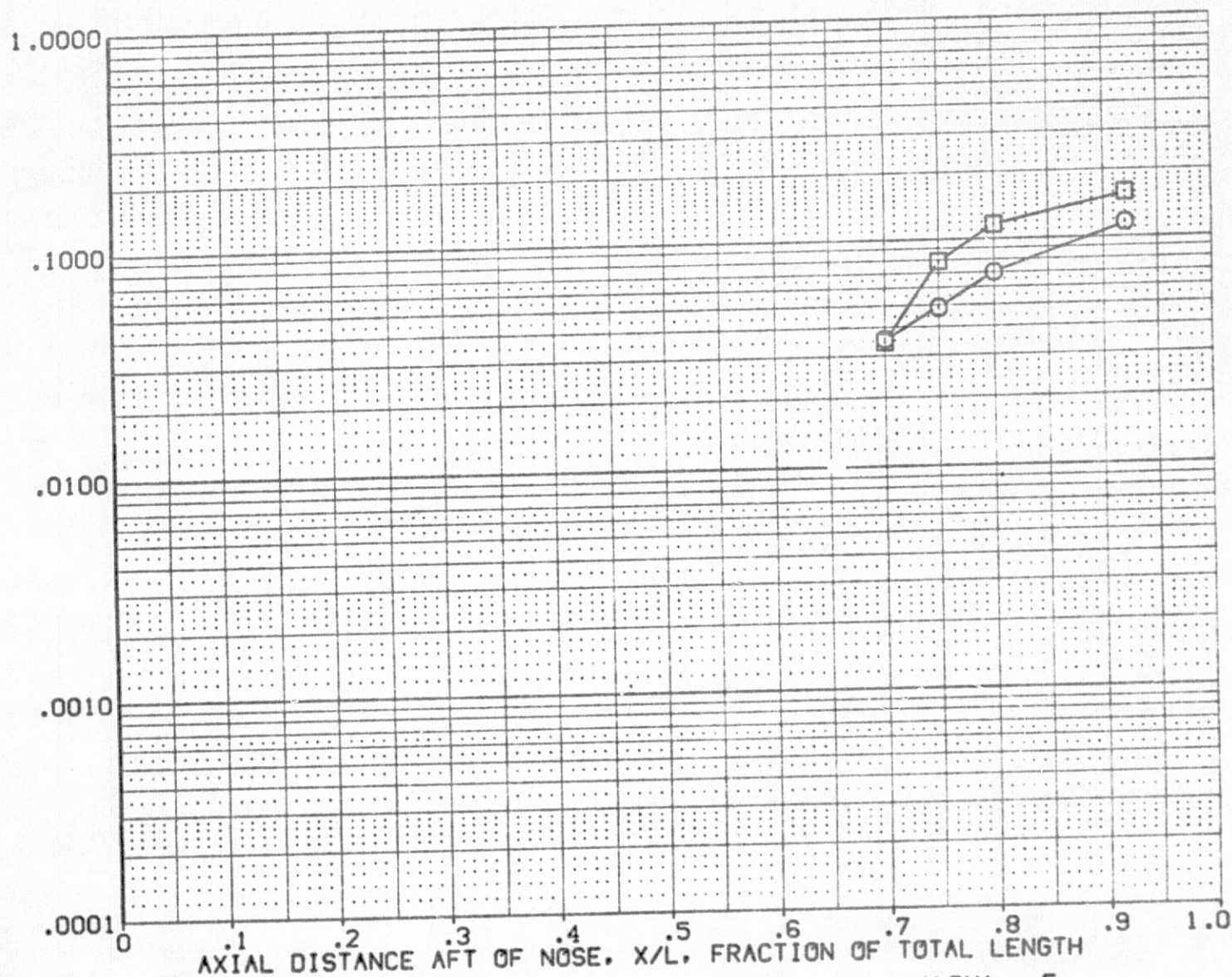
RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF.  $H/H_{REF}$ 

FIG. 62 SRB ALONE

RN VARIATION ALPHA = -5



IH16

S6

## SOLID ROCKET BOOSTER SURFACE (CPOS06)

SYMBOL	RN/L	PHI	HAV/HT
○	1.930	180.000	.900
□	4.600		

MACH	PARAMETRIC VALUES	
BETA	3.700	ALPHA -5.000
	.000	

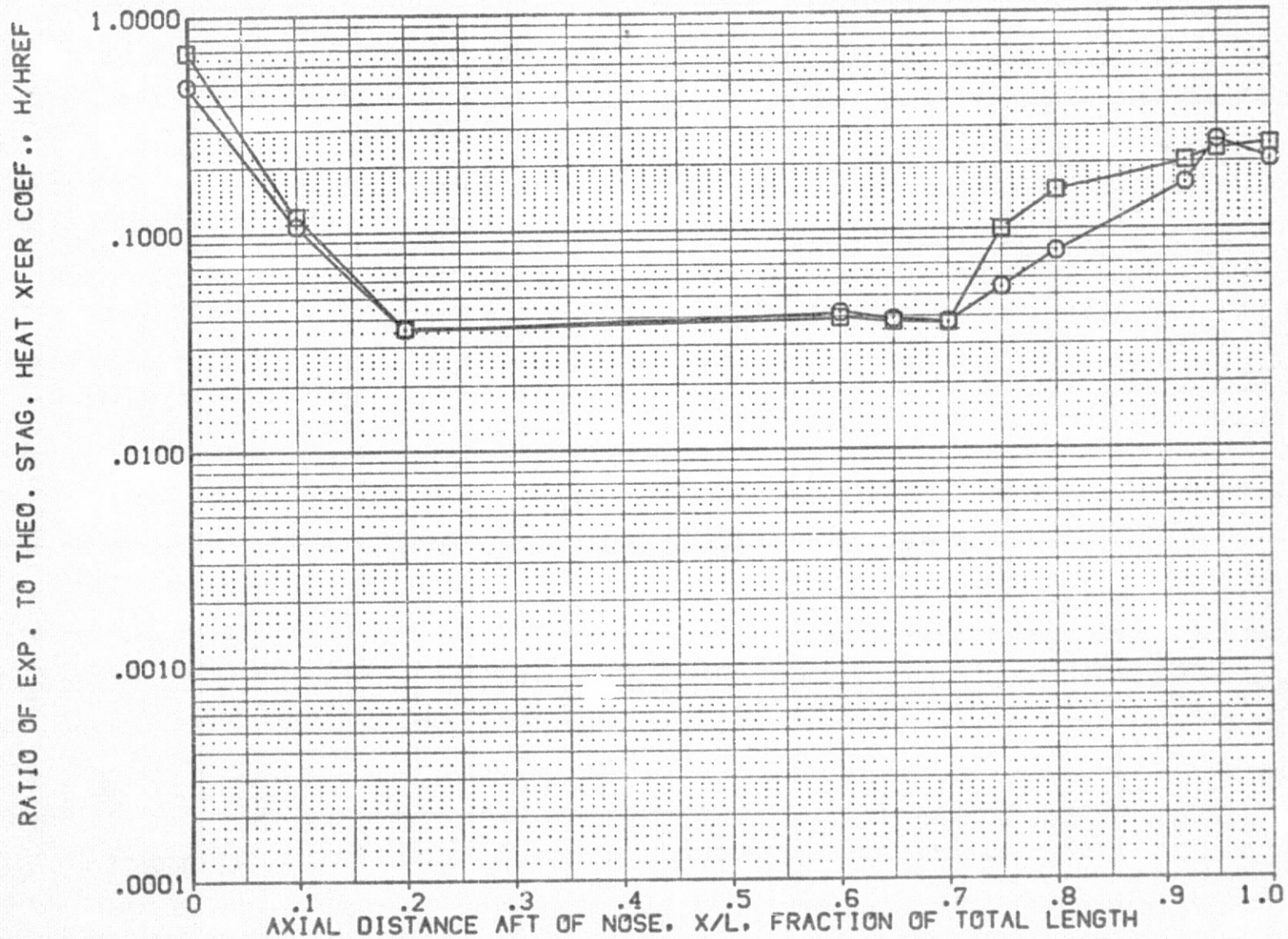


FIG. 62 SRB ALONE

RN VARIATION ALPHA = -5

IH16 S6

## SOLID ROCKET BOOSTER SURFACE (CPQS06)

SYMBOL  
○  
□

RN/L  
1.930  
4.600

PHI  
225.000

HAW/HT  
.900

PARAMETRIC VALUES  
MACH 3.700  
BETA .000  
ALPHA -5.000

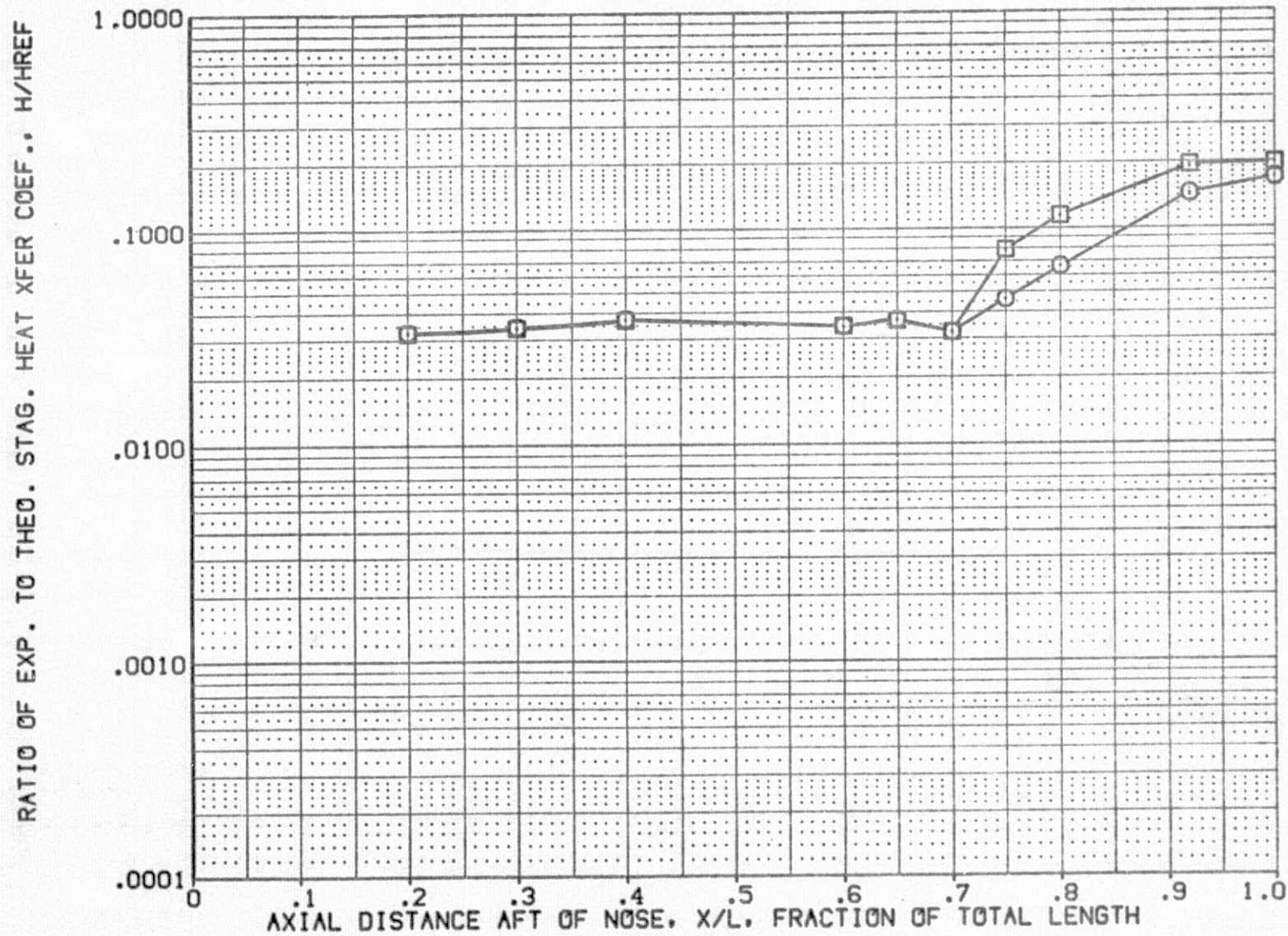


FIG. 62 SRB ALONE

RN VARIATION ALPHA = -5



IH16 S6

## SOLID ROCKET BOOSTER SURFACE (CPQS06)

SYMBOL	RN/L	PHI	HAV/HT
○	1.930	270.000	.900
□	4.600		

PARAMETRIC VALUES	
MACH	3.700
BETA	.000
ALPHA	-5.000



FIG. 62 SRB ALONE

RN VARIATION ALPHA = -5

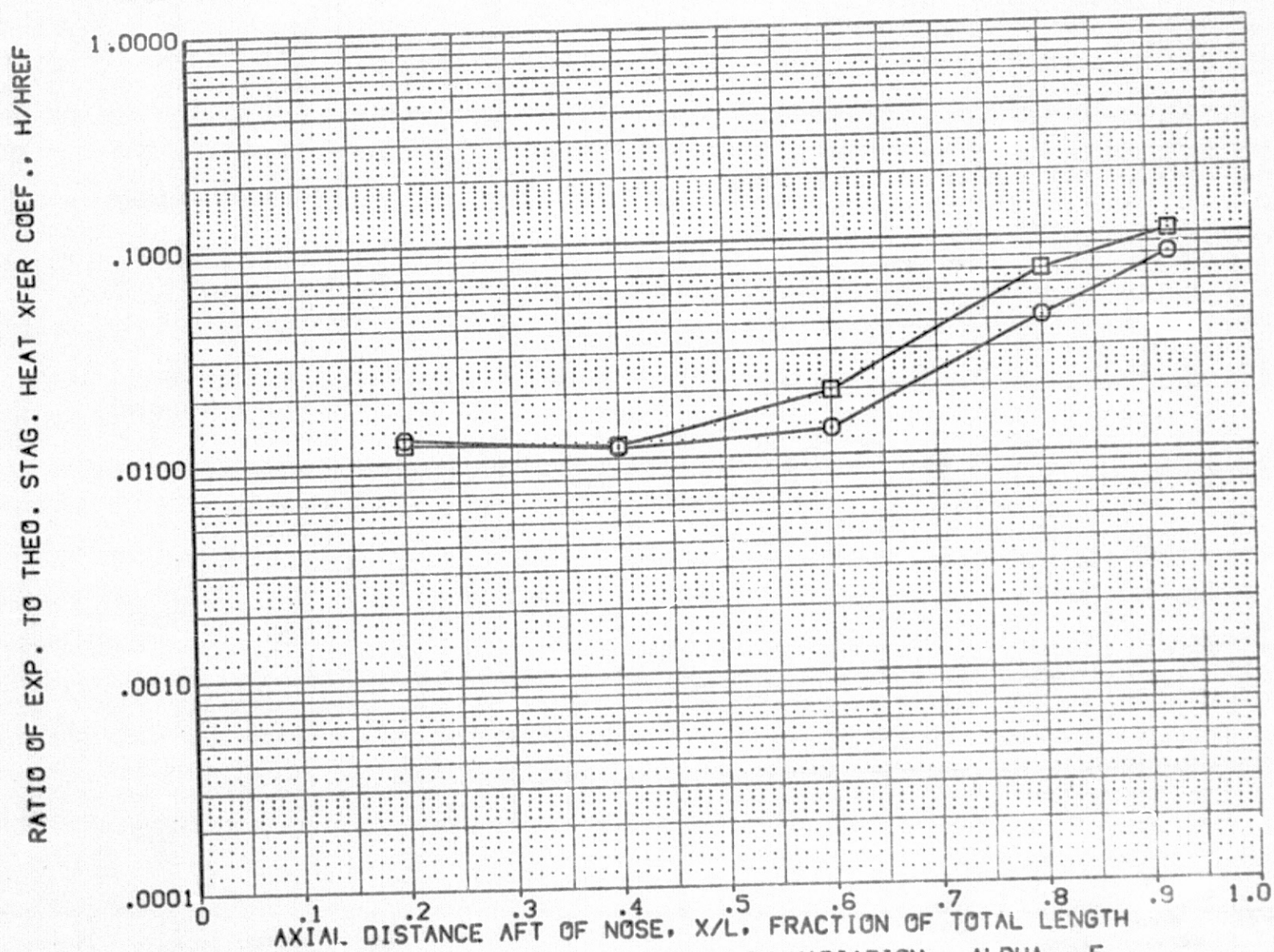


FIG. 62 SRB ALONE

RN VARIATION ALPHA = -5



IH16 S6 + GRIT

SOLID ROCKET BOOSTER SURFACE (CPQS17)

SYMBOL	RN/L	PHI	HAW/HT
○	1.930	90.000	.900
□	4.540		

		PARAMETRIC VALUES	
MACH	3.700	ALPHA	.000
BETA	.000	GRITNO	25.000

RATIO OF EXP. TO THEO. STAG. HEAT XFER COEF., H/HREF

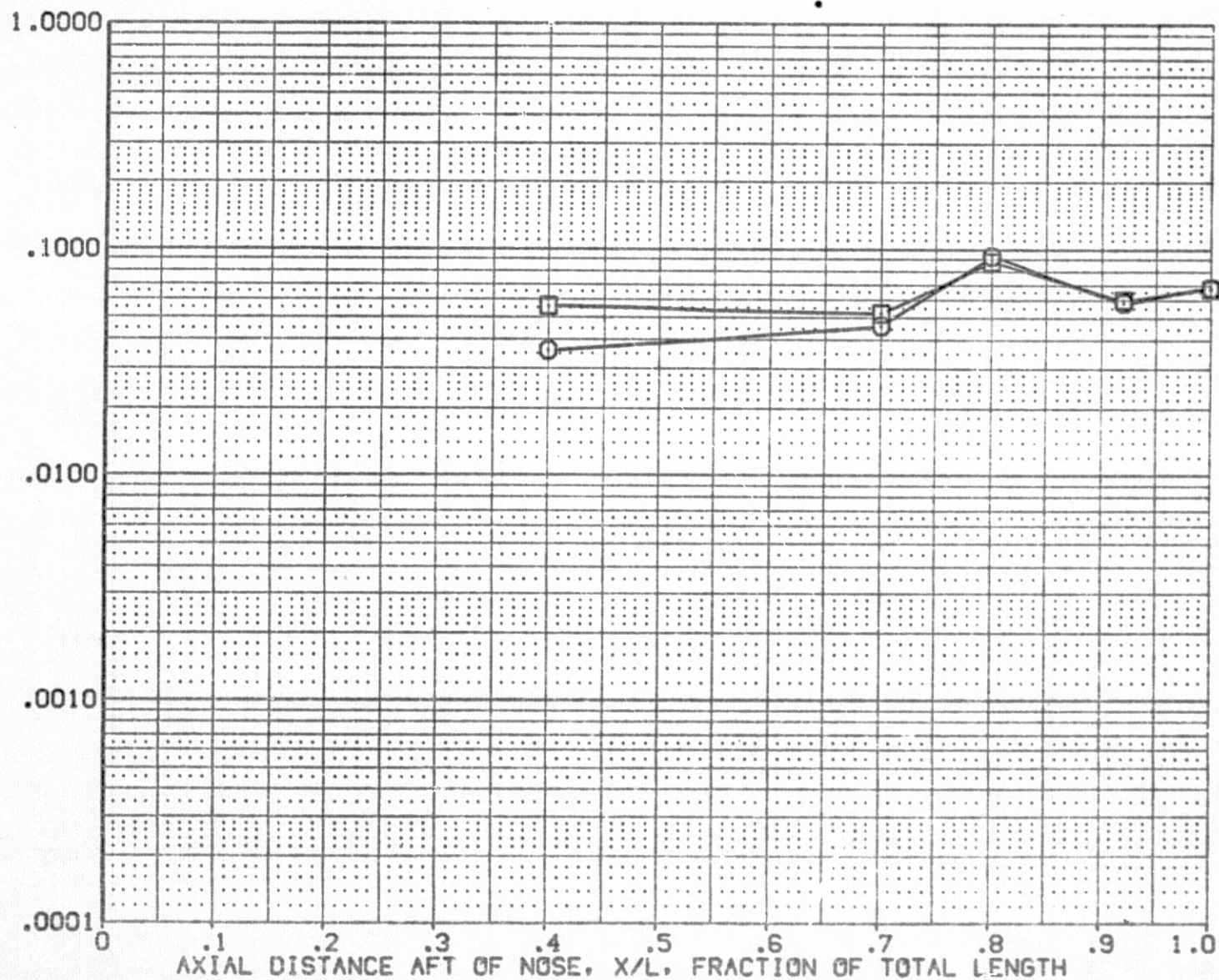


FIG. 63 SRB ALONE

RN VARIATION WITH GRIT

SYMBOL	RN/L	PHI	HAW/HT
□	1.930	135.000	.900
□	4.540		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	GRITNO	25.000

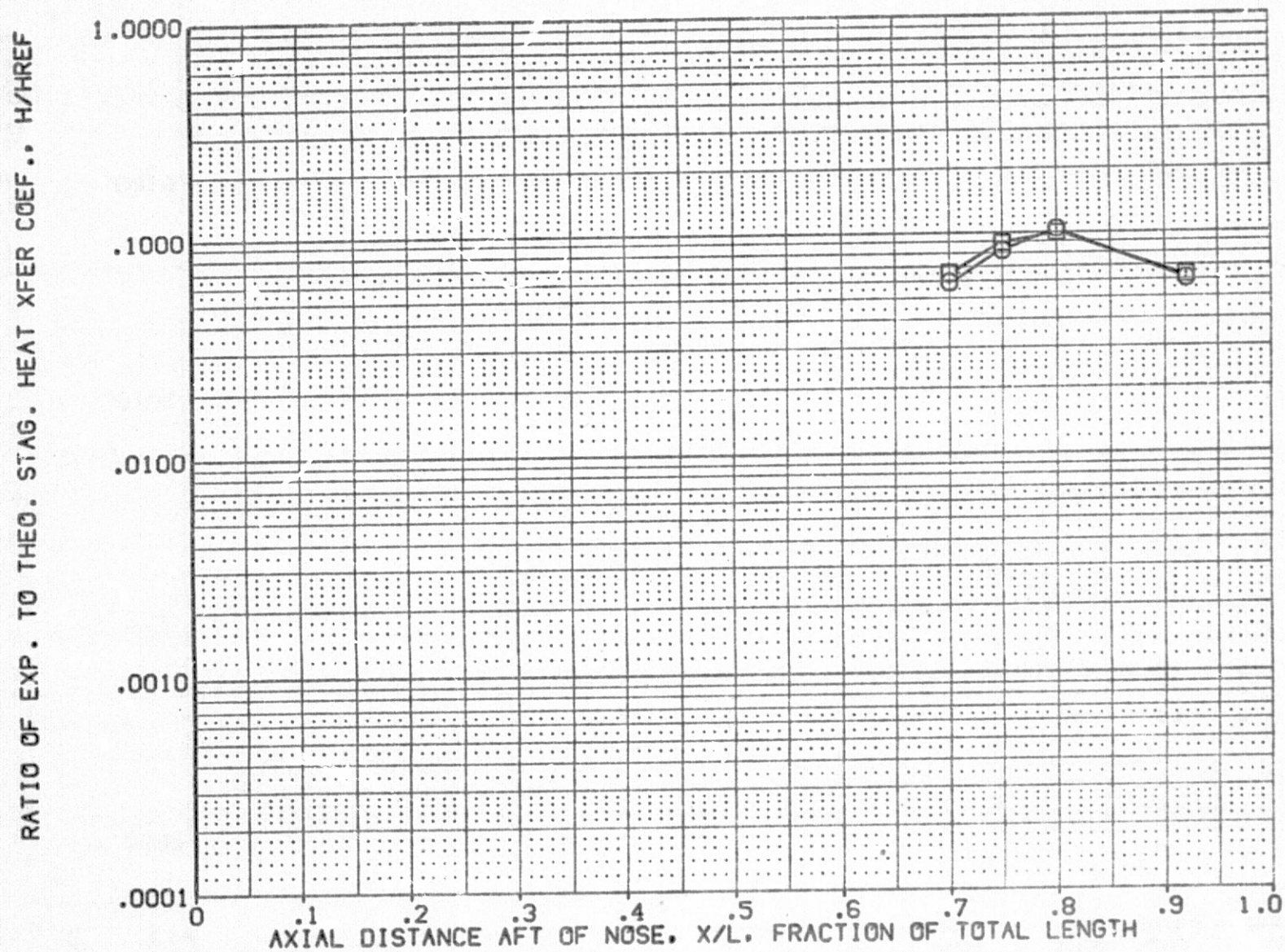


FIG. 63 SRB ALONE

RN VARIATION WITH GRIT



IH16 S6 + GRIT

SOLID ROCKET BOOSTER SURFACE (CPQS17)

SYMBOL	RN/L	PHI	HAY/HT
○	1.930	180.000	.900
□	4.540		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	GRITNO	25.000

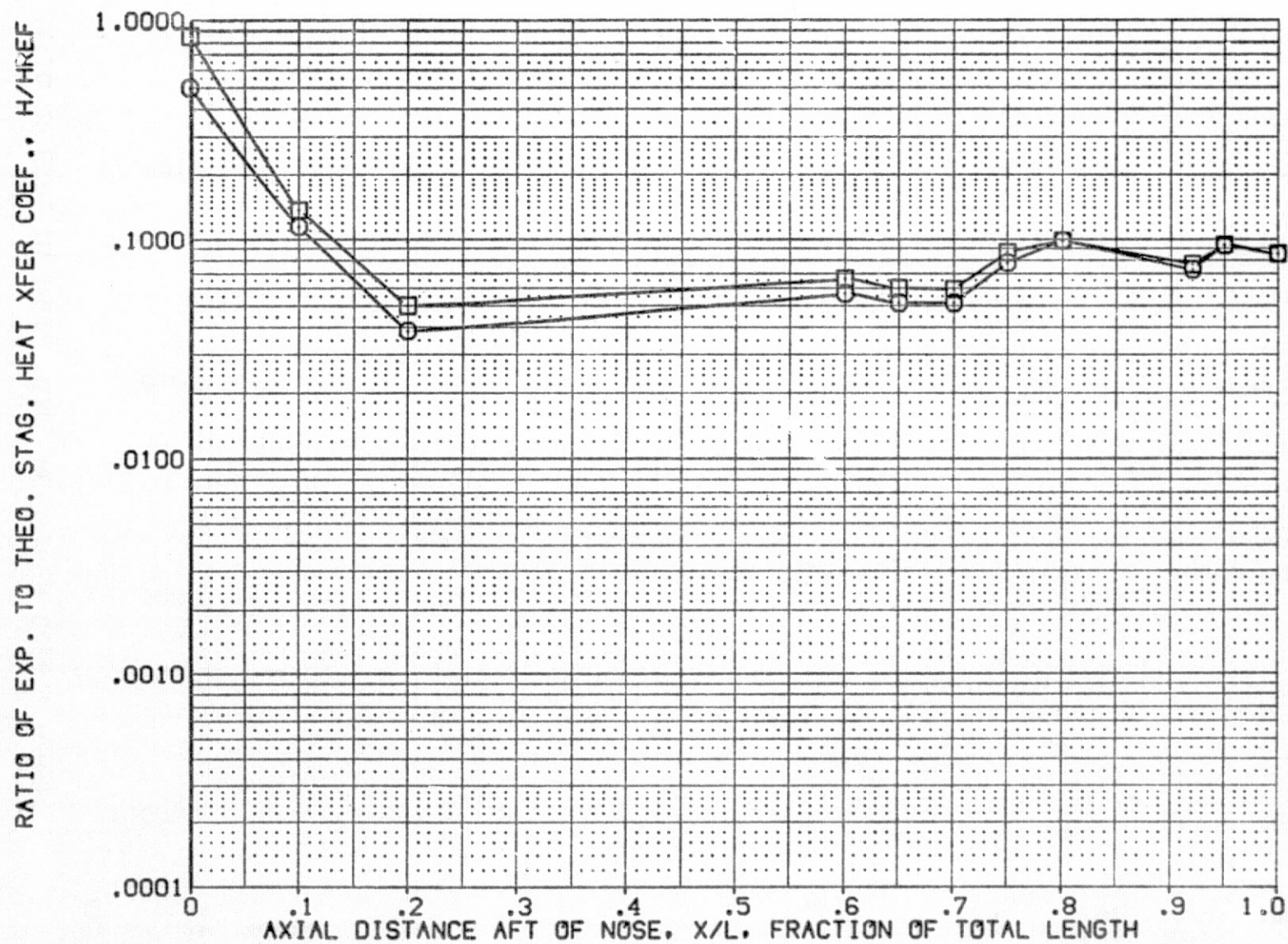


FIG. 63 SRB ALONE

RN VARIATION WITH GRIT

IH16 S6 + GRIT

SOLID ROCKET BOOSTER SURFACE (CPQS17)

SYMBOL	RN/L	PHI	HAW/HT
○	1.930	225.000	.900
□	4.540		

PARAMETRIC VALUES		
MACH	3.700	ALPHA .000
BETA	.000	GRITNO 25.000

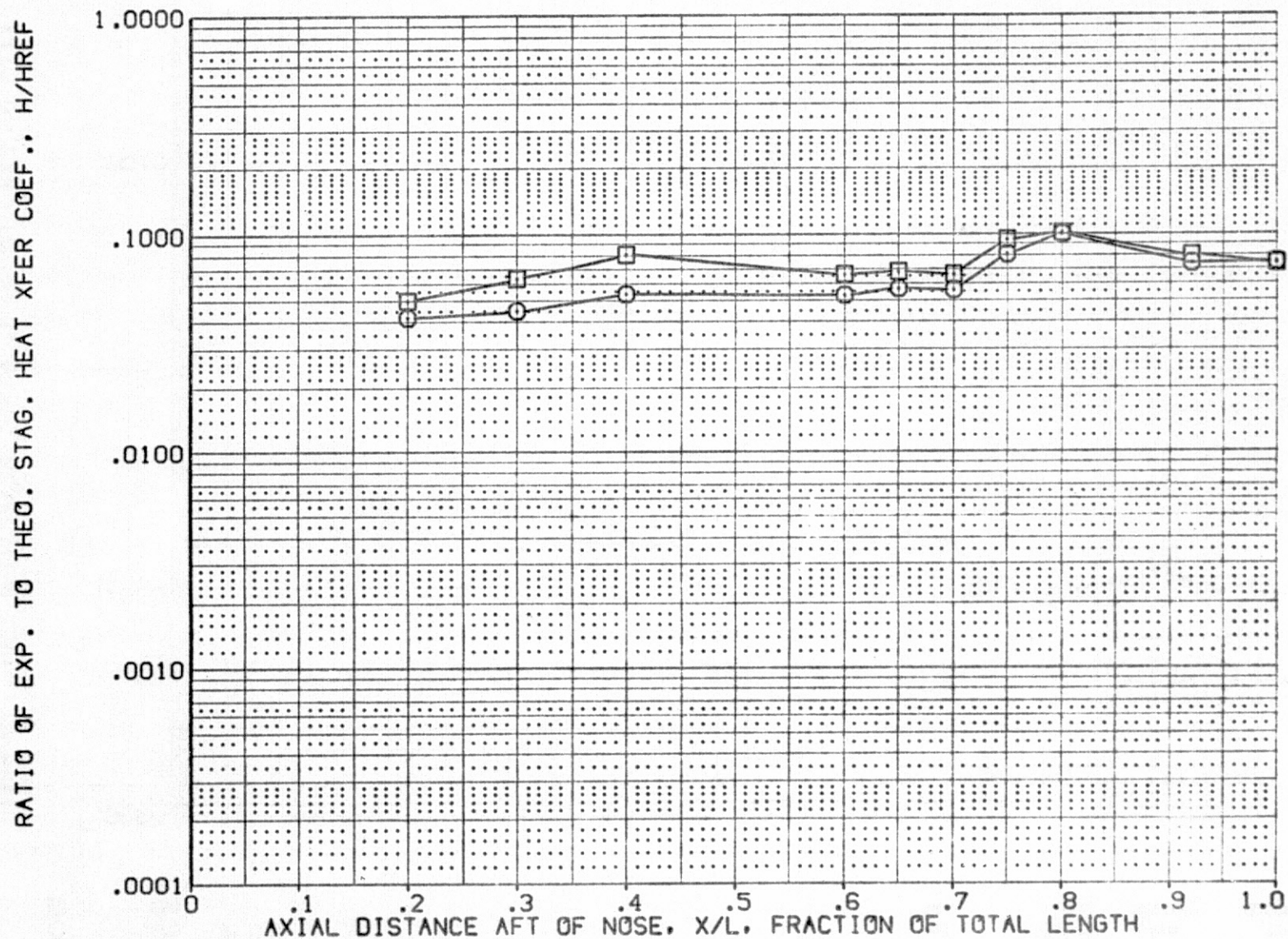


FIG. 63 SRB ALONE

RN VARIATION WITH GRIT





IH16 S6 + GRIT

SOLID ROCKET BOOSTER SURFACE (CPQS17)

SYMBOL	RN/L	PHI	HAW/HT
○	1.930	270.000	.900
□	4.540		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	GRITNO	25.000

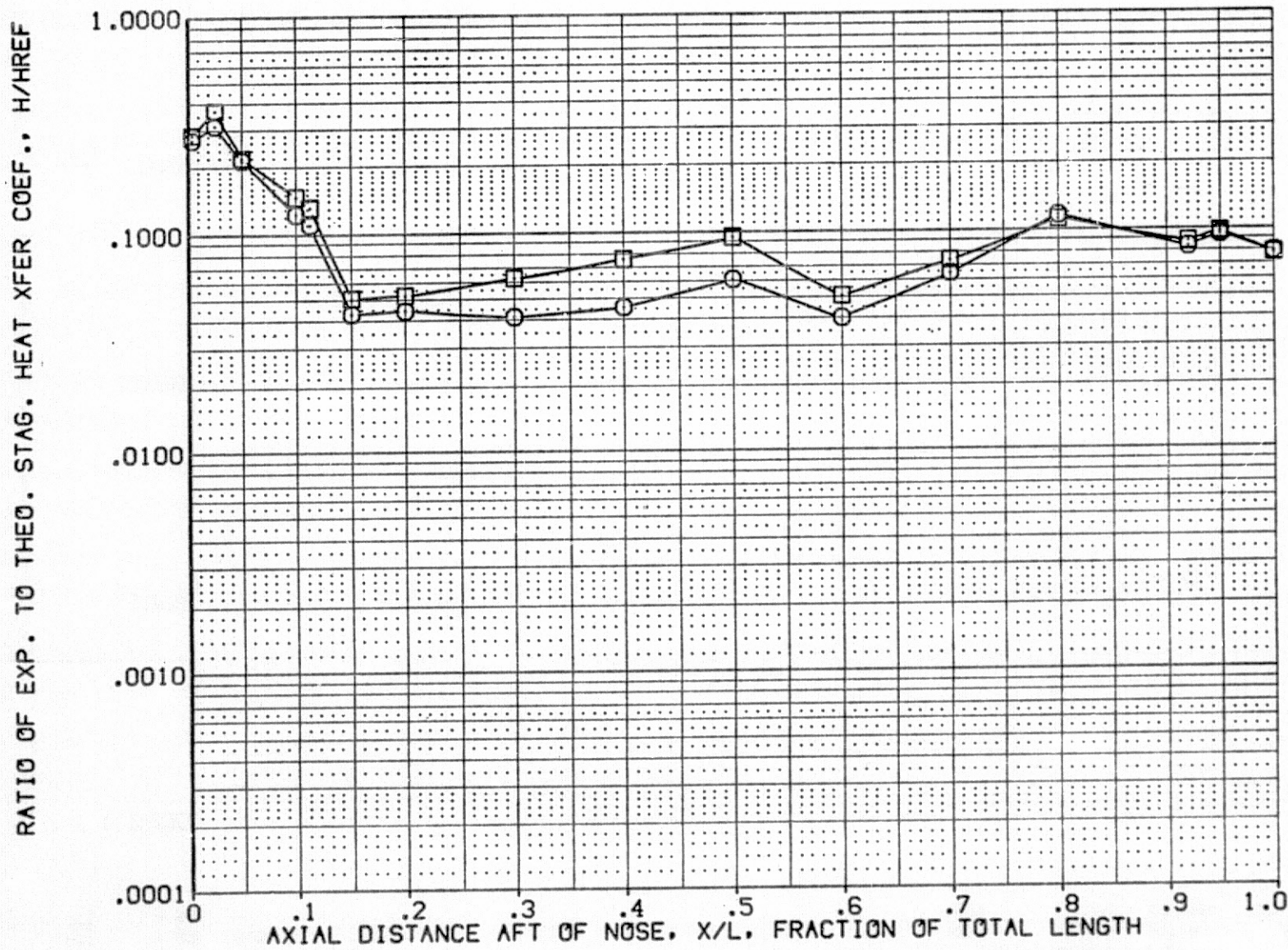


FIG. 63 SRB ALONE

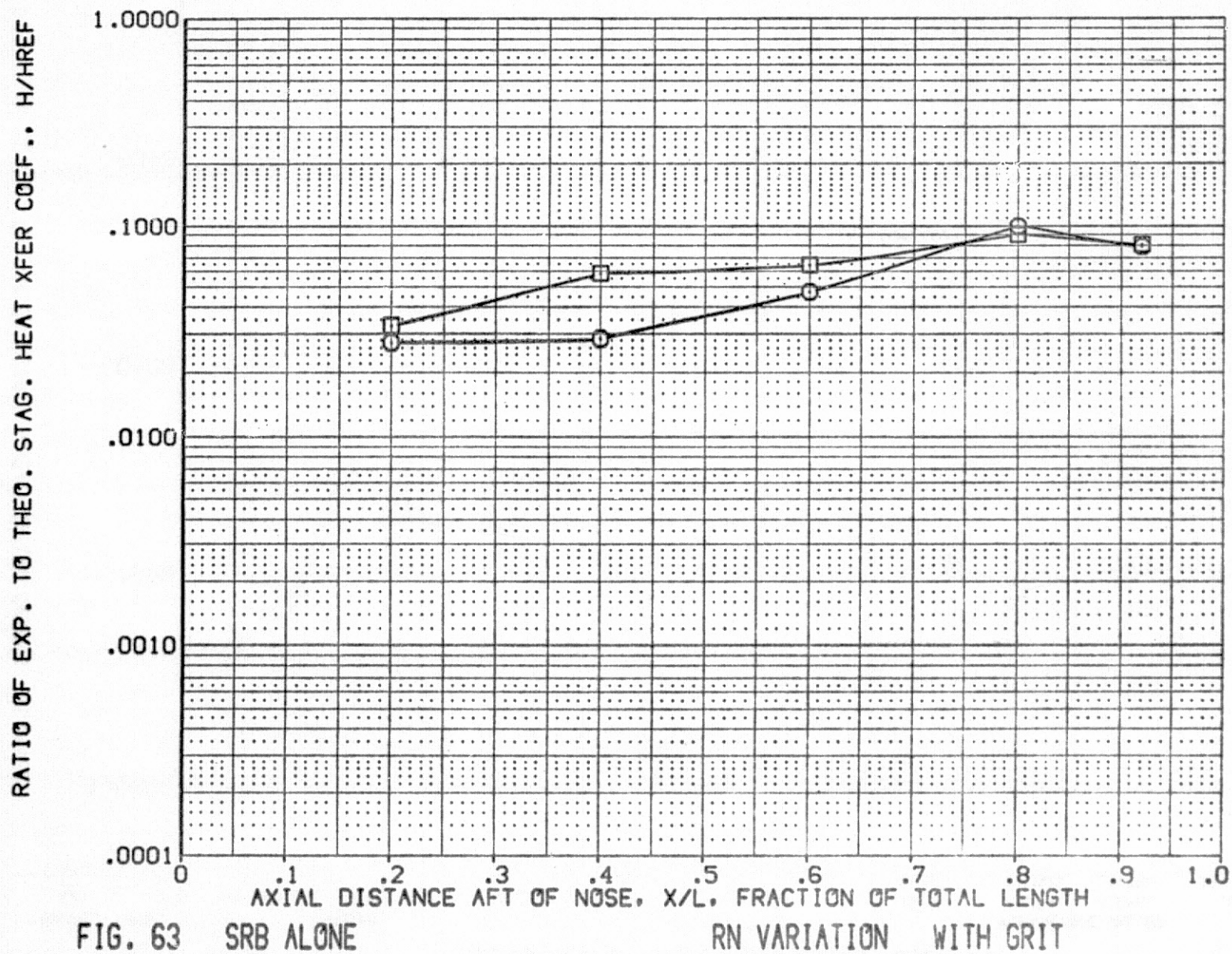
RN VARIATION WITH GRIT

IH16 S6 + GRIT

SOLID ROCKET BOOSTER SURFACE (CPQS17)

SYMBOL	RN/L	PHI	HAV/HT
○	1.930	315.000	.900
□	4.540		

PARAMETRIC VALUES			
MACH	3.700	ALPHA	.000
BETA	.000	GRITNO	25.000





APPENDIX  
TABULATED DATA

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Tabulations of plotted data are available on  
request from Data Management Services.

THERMOCOUPLE HOOK-UP SCHEDULE

1) EXTERNAL TANK

- (a) Alone - Thermocouple numbers 1 thru 111
- (b) Integrated Vehicle - #1 thru 111 minus #2, 3, 5, 7, 9, 11, 72, 75, 86, 87, 89, 99, 101, 110, 111

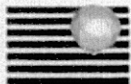
2) ORBITER

- (a) Alone - Thermocouple numbers 1 thru 57
- (b) Integrated Vehicle - #1 thru 57 minus #4, 5, 6, 22, 24, 37, 39, 46, 48, 52, 54, 56

3) SRB (all config.) - Thermocouple numbers 1 thru 55

Note: Tabulated data uses .0000 display for thermocouple locations not hooked up during run.





DATE 08 JUN 75

TABULATED DATA - IH16

PAGE 1

IH16 0898 + T8 + S8 ORBITER FUSELAGE SURFACE

(RPOB01) ( 31 OCT 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
LREF = 474.8100 IN. YMRP = .0000 Y/BW  
BREF = 936.6820 IN. ZMRP = .0000 Z  
SCALE = .0060

## PARAMETRIC DATA

MACH = 3.700 ALPHA = .000  
BETA = .000 DELTAH = .175

RN/L ( 1 ) = 1.930 HAW/HT( 1 ) = .850 MACH = 3.700 TO = 719.000 HO = 3968.500 ALPHA = .000

## SECTION ( 1 ) ORBITER FUSELAGE

## DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L  
.088 .0872  
.100 .0692  
.125 .0444  
.150 .0187  
.175 .0128  
.200 .0203  
.250 .0600  
.300 .1122  
.350 .1521  
.400 .1411  
.500 .1446 .1148  
.600 .1025 .0733  
.700 .0692 .0563  
.800 .0444 .0436  
.900 .0246 .0325  
1.000 .0423 .0372

RN/L ( 1 ) = 1.930 HAW/HT( 2 ) = .900 MACH = 3.700 TO = 719.000 HO = 3968.500 ALPHA = .000

## SECTION ( 1 ) ORBITER FUSELAGE

## DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L  
.088 .0448  
.100 .0373  
.125 .0245  
.150 .0104  
.175 .0070  
.200 .0106  
.250 .0275  
.300 .0445  
.350 .0813  
.400 .0593  
.500 .0593 .0499  
.600 .0470 .0357  
.700 .0331 .0282  
.800 .0213 .0221

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DATE 06 JUN 75

TABULATED DATA - IH16

PAGE 2

IH16 0896 + T8 + S6 ORBITER FUSELAGE SURFACE

(RPQ801)

RN/L ( 1 ) = 1.930 HAW/HT( 2 ) = .900

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.900	.0112	.0181
1.000	.0157	.0157

RN/L ( 1 ) = 1.930 HAW/HT( 3 ) = 1.000 MACH = 3.700 TO = 719.000 HO = 3968.500 ALPHA = .000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.088	.0227	
.100	.0194	
.125	.0129	
.150	.0055	
.175	.0037	
.200	.0054	
.250	.0132	
.300	.0202	
.350		.0279
.400		.0275
.500	.0272	.0234
.600	.0226	.0176
.700	.0162	.0141
.800	.0105	.0111
.900	.0054	.0080
1.000	.0070	.0073

RN/L ( 2 ) = 4.570 HAW/HT( 1 ) = .850 MACH = 3.700 TO = 724.000 HO = 9462.500 ALPHA = .000

SECTION ( 1 ) ORBITER FUSELAGE

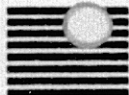
DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.088	.0824	
.100	.0699	
.125	.0509	
.150	.0251	
.175	.0256	
.200	.0648	
.250	.3744	
.300	1.0819	
.350		.3454
.400		.3825
.500	.2338	.1889





DATE 08 JUN 75

TABULATED DATA - IH16

PAGE 3

IH16 089B + T8 + S8 ORBITER FUSELAGE SURFACE

(RPQ801)

RN/L ( 2 ) = 4.570 HAW/HT( 1 ) = .850

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.500	.1415	.1036
.700	.0887	.0776
.800	.0595	.0765
.900	.0401	.0470
1.000	.0550	.0448

RN/L ( 2 ) = 4.570 HAW/HT( 2 ) = .900 MACH = 3.700 TO = 724.000 HO = 9462.500 ALPHA = .000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.088	.0414	
.100	.0355	
.125	.0285	
.150	.0134	
.175	.0130	
.200	.0272	
.250	.0745	
.300	.1003	
.350		.0871
.400		.0948
.500	.0717	.0848
.600	.0559	.0443
.700	.0390	.0350
.800	.0270	.0348
.900	.0185	.0233
1.000	.0224	.0201

RN/L ( 2 ) = 4.570 HAW/HT( 3 ) = 1.000 MACH = 3.700 TO = 724.000 HO = 9462.500 ALPHA = .000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.088	.0208	
.100	.0179	
.125	.0138	
.150	.0069	
.175	.0088	
.200	.0126	
.250	.0287	
.300	.0358	

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TABULATED DATA - IH16

PAGE 4

IH16 0898 + TB + S6 ORBITER FUSELAGE SURFACE

(RPOB01)

RN/L ( 2 ) = 4.570 HAH/HT ( 3 ) = 1.000

DEPENDENT VARIABLE H/HREF

SECTION ( 1 ) ORBITER FUSELAGE

Y (BP) .0000 70.0000

X/L	
.350	.0349
.400	.0378
.500	.0280
.600	.0253
.700	.0184
.800	.0129
.900	.0089
1.000	.0102





DATE 06 JUN 75

TABULATED DATA - IH16

PAGE 5

IH16 0898 + T8 + S6 ORBITER FUSELAGE SURFACE

(RPQB02) ( 31 OCT 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
LREF = 474.8100 IN. YMRP = .0000 Y/BW  
BREF = 936.6820 IN. ZMRP = .0000 Z  
SCALE = .0060

## PARAMETRIC DATA

MACH = 3.700 ALPHA = -5.000  
BETA = .000 DELTAH = .175

RN/L ( 1 ) = 1.990 HAW/HT( 1 ) = .850 MACH = 3.700 TO = 708.000 HO = 3961.000 ALPHA = -5.000

## SECTION ( 1 ) ORBITER FUSELAGE

## DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

## X/L

.088	.0957
.100	.0799
.125	.0590
.150	.0302
.175	.0216
.200	.0275
.250	.0472
.300	.0528
.350	.0992
.400	.1062
.500	.0836
.600	.0833
.700	.0624
.800	.0448
.900	.0301
1.000	.0425

RN/L ( 1 ) = 1.990 HAW/HT( 2 ) = .900 MACH = 3.700 TO = 708.000 HO = 3961.000 ALPHA = -5.000

## SECTION ( 1 ) ORBITER FUSELAGE

## DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

## X/L

.088	.0476
.100	.0410
.125	.0310
.150	.0162
.175	.0116
.200	.0142
.250	.0226
.300	.0242
.350	.0418
.400	.0440
.500	.0346
.600	.0354
.700	.0272
.800	.0198

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IH16 0898 + T8 + S6 ORBITER FUSELAGE SURFACE

(RPQB02)

RN/L ( 1 ) = 1.990 HAH/HT( 2 ) = .900

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.900	.0132	.0212
1.000	.0151	.0152

RN/L ( 1 ) = 1.990 HAH/HT( 3 ) = 1.000 MACH = 3.700 TO = 708.000 HO = 3961.000 ALPHA = -5.000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.088	.0237	
.100	.0208	
.125	.0159	
.150	.0084	
.175	.0060	
.200	.0072	
.250	.0111	
.300	.0116	
.350		.0193
.400		.0202
.500	.0159	.0183
.600	.0165	.0159
.700	.0128	.0152
.800	.0093	.0151
.900	.0062	.0102
1.000	.0066	.0089

RN/L ( 2 ) = 4.560 HAH/HT( 1 ) = .850 MACH = 3.700 TO = 725.000 HO = 9453.000 ALPHA = -5.000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.098	.0836	
.100	.0687	
.125	.0541	
.150	.0293	
.175	.0287	
.200	.0641	
.250	.1672	
.300	.3337	
.350		.3218
.400		.3660
.500	.2698	.2309





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TABULATED DATA - IH16

PAGE 7

IH16 0898 + T8 + S6 ORBITER FUSELAGE SURFACE

(RP0802)

RN/L ( 2 ) = 4.560 HAH/HT( 1 ) = .050

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.600	.1740	.1341
.700	.1218	.1312
.800	.1111	.1046
.900	.0565	.0550
1.000	.0599	.0535

RN/L ( 2 ) = 4.560 HAH/HT( 2 ) = .900 MACH = 3.700 TO = 725.000 HO = 9453.000 ALPHA = -5.000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.088	.0433	
.100	.0369	
.125	.0295	
.150	.0162	
.175	.0153	
.200	.0292	
.250	.0580	
.300	.0822	
.350		.0926
.400		.1017
.500	.0835	.0765
.600	.0676	.0556
.700	.0524	.0537
.800	.0467	.0473
.900	.0269	.0276
1.000	.0254	.0240

RN/L ( 2 ) = 4.560 HAH/HT( 3 ) = 1.000 MACH = 3.700 TO = 725.000 HO = 9453.000 ALPHA = -5.000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.088	.0220	
.100	.0192	
.125	.0154	
.150	.0086	
.175	.0079	
.200	.0140	
.250	.0252	
.300	.0327	

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TABULATED DATA - IH15

PAGE 8

IH15 0898 + T8 + S8 ORBITER FUSELAGE SURFACE

(RPO602)

RN/L ( 2 ) = 4.560 HAW/HT( 3 ) = 1.000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L	
.350	.0382
.400	.0416
.500	.0327
.600	.0351
.700	.0304
.800	.0258
.900	.0245
1.000	.0216
	.0226
	.0132
	.0138
	.0118
	.0114





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TABULATED DATA - IH16

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IH16 0898

ORBITER FUSELAGE SURFACE

(RPOB11) ( 31 OCT 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = .8500 X/LB  
LREF = 474.8100 IN. YMRP = .0000 Y/BH  
BREF = 936.6820 IN. ZMRP = .0000 Z  
SCALE = .0060

## PARAMETRIC DATA

MACH = 3.700 ALPHA = .000  
BETA = .000

RN/L ( 1 ) = 1.910 HAW/HT ( 1 ) = .850 MACH = 3.700 TO = 719.000 HO = 3921.400 ALPHA = .000

## SECTION ( 1 ) ORBITER FUSELAGE

## DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

## X/L

.088	.0000
.100	.0539
.125	.0426
.150	.0253
.175	.0210
.200	.0189
.250	.0198
.300	.0217
.350	.0386
.375	.0403
.400	.0247 .0421
.500	.0256 .0321
.600	.0257 .0266
.700	.0225 .0234
.800	.0159 .0203
.900	.0191 .0176
1.000	.0740 .0708
1.025	.0887

RN/L ( 1 ) = 1.910 HAW/HT ( 2 ) = .900 MACH = 3.700 TO = 719.000 HO = 3921.400 ALPHA = .000

## SECTION ( 1 ) ORBITER FUSELAGE

## DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

## X/L

.088	.0000
.100	.0298
.125	.0235
.150	.0140
.175	.0114
.200	.0102
.250	.0103
.300	.0110
.350	.0188
.375	.0195
.400	.0118 .0203
.500	.0120 .0156

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DATE 06 JUN 75

TABULATED DATA - IH16

PAGE 10

IH16 0098

ORBITER FUSELAGE SURFACE

(RPOB11)

RN/L ( 1 ) = 1.910 HAW/HT( 2 ) = .900

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.600	.0118	.0131
.700	.0100	.0115
.800	.0069	.0098
.900	.0072	.0077
1.000	.0247	.0252
1.025	.0281	

RN/L ( 1 ) = 1.910 HAW/HT( 3 ) = 1.000 MACH = 3.700 T0 = 719.000 H0 = 3921.400 ALPHA = .000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.088	.0000	
.100	.0157	
.125	.0124	
.150	.0074	
.175	.0060	
.200	.0053	
.250	.0053	
.300	.0055	
.350		.0093
.375		.0096
.400	.0058	.0100
.500	.0058	.0077
.600	.0057	.0065
.700	.0048	.0057
.800	.0032	.0048
.900	.0032	.0030
1.000	.0106	.0110
1.025	.0119	

RN/L ( 2 ) = 4.540 HAW/HT( 1 ) = .850 MACH = 3.700 T0 = 727.000 H0 = 9412.600 ALPHA = .000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.088	.0000	
.100	.0454	
.125	.0382	
.150	.0214	
.175	.0181	





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TABULATED DATA - IH16

PAGE 11

IH16 0898

ORBITER FUSELAGE SURFACE

(RP0811)

RN/L ( 2 ) = 4.540 HAW/HT( 1 ) = .850

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.200	.0155	
.250	.0164	
.300	.0163	
.350		.0342
.375		.0339
.400	.0214	.0355
.500	.0237	.0275
.600	.0287	.0253
.700	.0486	.0219
.800	.0539	.0203
.900	.0543	.0176
1.000	.0745	.0628
1.025	.0838	

RN/L ( 2 ) = 4.540 HAW/HT( 2 ) = .900 MACH = 3.700 TO = 727.000 HO = 9412.600 ALPHA = .000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.088	.0000	
.100	.0267	
.125	.0215	
.150	.0128	
.175	.0108	
.200	.0093	
.250	.0097	
.300	.0095	
.350		.0192
.375		.0189
.400	.0120	.0198
.500	.0131	.0154
.600	.0154	.0143
.700	.0248	.0123
.800	.0272	.0115
.900	.0270	.0098
1.000	.0345	.0292
1.025	.0372	

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TABULATED DATA - IH18

DATE 08 JUN 75

(RPOB11)  
 ORBITER FUSELAGE SURFACE  
 IH18 0898  
 HAW/HT( 3) = 1.000  
 MACH = 3.700 TO = 727.000 HO = 5412.600 ALPHA = .000  
 RN/L ( 2) = 4.540

DEPENDENT VARIABLE H/HREF

SECTION ( 1 ) ORBITER FUSELAGE

Y(BP) .0000 70.0000

X/L

.088	.0000
.100	.0147
.125	.0118
.150	.0071
.175	.0060
.200	.0052
.250	.0054
.300	.0052
.350	.0103
.375	.0100
.400	.0105
.500	.0069
.600	.0080
.700	.0126
.800	.0137
.900	.0135
1.000	.0166
1.025	.0176





DATE 06 JUN 75

TABULATED DATA - IH16

PAGE 13

IH16 0898

ORBITER FUSELAGE SURFACE

(RPOB12) ( 31 OCT 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
LREF = 474.8100 IN. YMRP = .0000 Y/BW  
BREF = 936.6820 IN. ZMRP = .0000 Z  
SCALE = .0060

## PARAMETRIC DATA

MACH = 3.700 ALPHA = -5.000  
BETA = .000

RN/L ( 1 ) = 1.950 HAW/HT ( 1 ) = .850 MACH = 3.700 TO = 715.000 HO = 3953.800 ALPHA = -5.000

## SECTION ( 1 ) ORBITER FUSELAGE

## DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

## X/L

.088	.0000
.100	.0376
.125	.0290
.150	.0163
.175	.0134
.200	.0109
.250	.0120
.300	.0147
.350	.0206
.375	.0222
.400	.0248
.500	.0367
.600	.0523
.700	.0459
.800	.0341
.900	.0292
1.000	.0324
1.025	.0308

RN/L ( 1 ) = 1.950 HAW/HT ( 2 ) = .900 MACH = 3.700 TO = 715.000 HO = 3953.800 ALPHA = -5.000

## SECTION ( 1 ) ORBITER FUSELAGE

## DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

## X/L

.088	.0000
.100	.0216
.125	.0166
.150	.0094
.175	.0076
.200	.0062
.250	.0066
.300	.0079
.350	.0109
.375	.0116
.400	.0126
.500	.0178

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IH16 0898

ORBITER FUSELAGE SURFACE

(RPOB12)

RN/L ( 1 ) = 1.950 HAH/HT( 2 ) = .900

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.600	.0247	.0312
.700	.0223	.0298
.800	.0171	.0252
.900	.0147	.0184
1.000	.0161	.0164
1.025	.0150	

RN/L ( 1 ) = 1.950 HAH/HT( 3 ) = 1.000 MACH = 3.700 TO = 715.000 HO = 3953.800 ALPHA = -5.000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.088	.0000	
.100	.0117	
.125	.0090	
.150	.0051	
.175	.0041	
.200	.0033	
.250	.0035	
.300	.0041	
.350		.0056
.375		.0059
.400	.0064	.0075
.500	.0088	.0112
.600	.0120	.0152
.700	.0110	.0148
.800	.0086	.0129
.900	.0074	.0094
1.000	.0080	.0084
1.025	.0074	

RN/L ( 2 ) = 4.560 HAH/HT( 1 ) = .850 MACH = 3.700 TO = 725.000 HO = 9441.100 ALPHA = -5.000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.088	.0739	
.100	.0347	
.125	.0277	
.150	.0155	
.175	.0125	





DATE 08 JUN 75 TABULATED DATA - IH18

ORBITER FUSELAGE SURFACE (RPOB12)

RN/L ( 2 ) = 4.560 HAW/HT ( 1 ) = .850

SECTION ( 1 ) ORBITER FUSELAGE DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.200	.0107
.250	.0120
.300	.0156
.350	.0261
.375	.0321
.400	.0293
.500	.0472
.600	.0791
.700	.0827
.800	.0668
.900	.0544
1.000	.0691
1.025	.0895

RN/L ( 2 ) = 4.560 HAW/HT ( 2 ) = .900 MACH = 3.700 T0 = 725.000 H0 = 9441.100 ALPHA = -5.000

SECTION ( 1 ) ORBITER FUSELAGE DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.038	.0430
.100	.0206
.125	.0166
.150	.0094
.175	.0075
.200	.0064
.250	.0072
.300	.0091
.350	.0148
.375	.0175
.400	.0235
.500	.0239
.600	.0374
.700	.0388
.800	.0320
.900	.0264
1.000	.0299
1.025	.0351

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TABULATED DATA - IH16

DATE 06 JUN 75

(RPOB12)

ORBITER FUSELAGE SURFACE

IH16 0898

MACH = 3.700 T0 = 725.000 H0 = 9441.100 ALPHA = -5.000

RN/L (2) = 4.560 HAM/HT (3) = 1.000

DEPENDENT VARIABLE H/HREF

SECTION (1) ORBITER FUSELAGE

Y(BP) .0000 70.0000

X/L

.088	.0234
.100	.0114
.125	.0092
.150	.0052
.175	.0042
.200	.0036
.250	.0040
.300	.0049
.350	.0078
.375	.0092
.400	.0121
.500	.0120
.600	.0182
.700	.0188
.800	.0157
.900	.0130
1.000	.0140
1.025	.0158





DATE 06 JUN 75

TABULATED DATA - 1H16

PAGE 17

1H16 089B + T8 + S6 ORBITER FUSELAGE SURFACE

(RPOB13) ( 31 OCT 74 )

## REFERENCE DATA

SREF = 2890.0000 SQ.FT. XMRP = .6500 X/LB  
LREF = 474.8100 IN. YMRP = .0000 Y/BW  
BREF = 936.6820 IN. ZMRP = .0000 Z  
SCALE = .0060

## PARAMETRIC DATA

MACH = 3.700 ALPHA = .000  
BETA = .000 DELTAH = .069

RN/L ( 1 ) = 1.990 HAH/HT( 1 ) = .850 MACH = 3.700 TO = 723.000 HO = 4087.200 ALPHA = .000

## SECTION ( 1 ) ORBITER FUSELAGE

## DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L  
.088 .0416  
.100 .0417  
.125 .0311  
.150 .0573  
.175 .0588  
.200 .0542  
.250 .0645  
.300 .1109  
.350 .1620  
.400 .1583  
.500 .1007 .0811  
.600 .0654 .0465  
.700 .0507 .0392  
.800 .0407 .0410  
.900 .0249 .0266  
1.000 .0329 .0320

RN/L ( 1 ) = 1.990 HAH/HT( 2 ) = .900 MACH = 3.700 TO = 723.000 HO = 4087.200 ALPHA = .000

## SECTION ( 1 ) ORBITER FUSELAGE

## DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L  
.088 .0225  
.100 .0224  
.125 .0306  
.150 .0271  
.175 .0273  
.200 .0255  
.250 .0292  
.300 .0438  
.350 .0845  
.400 .0654  
.500 .0439 .0377  
.600 .0302 .0229  
.700 .0227 .0188  
.800 .0182 .0199

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IH16 0898 + T8 + S8 ORBITER FUSELAGE SURFACE

(RPOB13)

RN/L ( 1 ) = 1.990 HAW/HT( 2 ) = .900

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.900	.0110	.0131
1.000	.0144	.0147

RN/L ( 1 ) = 1.990 HAW/HT( 3 ) = 1.000 MACH = 3.700 TO = 723.000 HO = 4087.200 ALPHA = .000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.088	.0117	
.100	.0116	
.125	.0153	
.150	.0132	
.175	.0134	
.200	.0124	
.250	.0140	
.300	.0198	
.350		.0293
.400		.0301
.500	.0206	.0182
.600	.0145	.0114
.700	.0108	.0092
.800	.0086	.0098
.900	.0052	.0065
1.000	.0069	.0071

RN/L ( 2 ) = 4.550 HAW/HT( 1 ) = .850 MACH = 3.700 TO = 728.000 HO = 9498.400 ALPHA = .000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.088	.0590	
.100	.0558	
.125	.1150	
.150	.1202	
.175	.1146	
.200	.1016	
.250	.2243	
.300	.5085	
.350		.3397
.400		.2608
.500	.1277	.1012





DATE 06 JUN 75

TABULATED DATA - IH18

PAGE 19

IH18 0898 + T8 + S6 ORBITER FUSELAGE SURFACE

(RPOB13)

RN/L ( 2 ) = 4.550 HAH/HT( 1 ) = .850

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.600	.0825	.0572
.700	.0589	.0537
.800	.0986	.0862
.900	.0568	.0400
1.000	.0643	.0550

RN/L ( 2 ) = 4.550 HAH/HT( 2 ) = .000 MACH = 3.700 TO = 728.000 HO = 9498.400 ALPHA = .000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.088	.0319	
.100	.0298	
.125	.0511	
.150	.0479	
.175	.0466	
.200	.0432	
.250	.0678	
.300	.0990	
.350		.0991
.400		.0907
.500	.0551	.0467
.600	.0400	.0294
.700	.0285	.0263
.800	.0401	.0399
.900	.0257	.0207
1.000	.0282	.0257

RN/L ( 2 ) = 4.550 HAH/HT( 3 ) = 1.000 MACH = 3.700 TO = 728.000 HO = 9498.400 ALPHA = .000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.088	.0187
.100	.0154
.125	.0242
.150	.0217
.175	.0213
.200	.0201
.250	.0282
.300	.0379

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(RPOB13)

## TABULATED DATA - IH18

IH18 Q898 + TB + S6 ORBITER FUSELAGE SURFACE

1.000

HAM/HT ( 3 ) \*

4.550

RN/L ( 2 ) \*

DEPENDENT VARIABLE H/HREF

SECTION ( 1 ) ORBITER FUSELAGE

Y (BP) .0000 70.0000

X/L	
.350	.0410
.400	.0393
.500	.0258
.600	.0197
.700	.0140
.800	.0184
.900	.0123
1.000	.0133





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OF POOR QUALITY

DATE 06 JUN 75

TABULATED DATA - IH16

PAGE 21

IH16 0808 + T6 + S6 ORBITER FUSELAGE SURFACE

(RPOB14) ( 31 OCT 74 )

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
LREF = 474.8100 IN. YMRP = .0000 Y/BW  
BREF = 936.6820 IN. ZMRP = .0000 Z  
SCALE = .0060

PARAMETRIC DATA

MACH = 3.700 ALPHA = -5.000  
BETA = .000 DELTAH = .069

RN/L ( 1 ) = 2.000 HAW/HT ( 1 ) = .850 MACH = 3.700 T0 = 720.000 H0 = 4102.800 ALPHA = -5.000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.088	.0830
.100	.0780
.125	.0860
.150	.0623
.175	.0548
.200	.0460
.250	.0469
.300	.0519
.350	.1112
.400	.1135
.500	.0652 .0664
.600	.0617 .0493
.700	.0516 .0509
.800	.0392 .0490
.900	.0226 .0287
1.000	.0361 .0367

RN/L ( 1 ) = 2.000 HAW/HT ( 2 ) = .900 MACH = 3.700 T0 = 720.000 H0 = 4102.800 ALPHA = -5.000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.088	.0419
.100	.0393
.125	.0407
.150	.0290
.175	.0260
.200	.0222
.250	.0222
.300	.0238
.350	.0457
.400	.0473
.500	.0237 .0305
.600	.0283 .0235
.700	.0236 .0236
.800	.0182 .0232

IH16 0898 + TB + S6 ORBITER FUSELAGE SURFACE

(RPOB14)

RN/L ( 1 ) = 2.000 HAH/HT( 2 ) = .900

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.900	.0108	.0144
1.000	.0170	.0171

RN/L ( 1 ) = 2.000 HAH/HT( 3 ) = 1.000 MACH = 3.700 TO = 720.000 HO = 4102.800 ALPHA = -5.000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.088	.0210	
.100	.0198	
.125	.0198	
.150	.0140	
.175	.0127	
.200	.0109	
.250	.0108	
.300	.0115	
.350		.0210
.400		.0218
.500	.0142	.0147
.600	.0136	.0115
.700	.0113	.0114
.800	.0088	.0113
.900	.0053	.0072
1.000	.0083	.0083

RN/L ( 2 ) = 4.470 HAH/HT( 1 ) = .850 MACH = 3.700 TO = 723.000 HO = 9261.100 ALPHA = -5.000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.088	.1058	
.100	.0845	
.125	.1435	
.150	.1282	
.175	.1090	
.200	.0933	
.250	.1544	
.300	.3902	
.350		.5815
.400		.5496
.500	.2524	.1961





DATE 06 JUN 75

TABULATED DATA - IH16

PAGE 23

IH16 0898 + T8 + S6 ORBITER FUSELAGE SURFACE

(RPOB14)

RN/L ( 2 ) = 4.470 HAH/HT( 1 ) = .850

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.600	.1575	.1245
.700	.1585	.1483
.800	.1763	.1226
.900	.0540	.0424
1.000	.0718	.0643

RN/L ( 2 ) = 4.470 HAH/HT( 2 ) = .800 MACH = 3.700 TO = 723.000 HO = 9261.100 ALPHA = -5.000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.088	.0480	
.100	.0399	
.125	.0554	
.150	.0449	
.175	.0405	
.200	.0360	
.250	.0475	
.300	.0739	
.350		.1080
.400		.1120
.500	.0773	.0663
.600	.0608	.0492
.700	.0580	.0537
.800	.0593	.0504
.900	.0244	.0213
1.000	.0318	.0282

RN/L ( 2 ) = 4.470 HAH/HT( 3 ) = 1.000 MACH = 3.700 TO = 723.000 HO = 9261.100 ALPHA = -5.000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.088	.0229	
.100	.0194	
.125	.0249	
.150	.0195	
.175	.0179	
.200	.0162	
.250	.0189	
.300	.0282	

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DATE 08 JUN 75

TABULATED DATA - 2H18

PAGE 24

1H18 0898 + T8 + 58 ORBITER FUSELAGE SURFACE

(RPQB14)

RN/L ( 2 ) = 4.470 HAW/HT( 3 ) = 1.000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.350		.0411
.400		.0432
.500	.0324	.0285
.600	.0273	.0223
.700	.0255	.0236
.800	.0255	.0232
.900	.0117	.0106
1.000	.0150	.0133





DATE 08 JUN 78

TABULATED DATA - IH16

PAGE 25

IH16 089B+T8+S8+GRIT ORBITER FUSELAGE SURFACE

(RPOB15) ( 31 OCT 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
LREF = 474.8100 IN. YMRP = .0000 Y/BW  
BREF = 936.6820 IN. ZMRP = .0000 Z  
SCALE = .0060

## PARAMETRIC DATA

MACH = 3.700 ALPHA = .000  
BETA = .000 DELTAH = .175  
GRITNO = 25.000

RN/L ( 1 ) = 1.890 HAH/HT( 1 ) = .850 MACH = 3.700 TO = 725.000 HQ = 3909.300 ALPHA = .000

## SECTION ( 1 ) ORBITER FUSELAGE

## DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L  
.088 .0984  
.100 .0901  
.125 .0762  
.150 .0530  
.175 .0658  
.200 .1382  
.250 .2423  
.300 .2012  
.350 .1656  
.400 .1565  
.500 .1090 .0873  
.600 .0791 .0566  
.700 .0557 .0438  
.800 .0382 .0410  
.900 .0285 .0332  
1.000 .0309 .0291

RN/L ( 1 ) = 1.890 HAH/HT( 2 ) = .900 MACH = 3.700 TO = 725.000 HQ = 3909.300 ALPHA = .000

## SECTION ( 1 ) ORBITER FUSELAGE

## DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L  
.088 .0482  
.100 .0448  
.125 .0380  
.150 .0258  
.175 .0295  
.200 .0481  
.250 .0737  
.300 .0702  
.350 .0662  
.400 .0668  
.500 .0490 .0416  
.600 .0380 .0287  
.700 .0266 .0220  
.800 .0180 .0205

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DATE 06 JUN 75

TABULATED DATA - IH16

PAGE 26

IH16 0898+78+56+GRIT ORBITER FUSELAGE SURFACE

(RPO815)

RN/L ( 1 ) = 1.890 HAH/HT( 2 ) = .900

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.900	.0131	.0166
1.000	.0134	.0135

RN/L ( 1 ) = 1.890 HAH/HT( 3 ) = 1.000 MACH = 3.700 TO = 725.000 HO = 3909.300 ALPHA = .000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.088	.0239	
.100	.0223	
.125	.0190	
.150	.0127	
.175	.0141	
.200	.0209	
.250	.0308	
.300	.0305	
.350		.0308
.400		.0311
.500	.0233	.0203
.600	.0186	.0144
.700	.0130	.0110
.800	.0088	.0103
.900	.0063	.0063
1.000	.0063	.0065

RN/L ( 2 ) = 4.620 HAH/HT( 1 ) = .850 MACH = 3.700 TO = 723.000 HO = 9494.500 ALPHA = .000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.088	.0808	
.100	.0531	
.125	.1175	
.150	.1675	
.175	.2948	
.200	.3922	
.250	.4998	
.300	.4602	
.350		.4574
.400		.4236
.500	.1928	.1650





DATE 08 JUN 75

TABULATED DATA - IH16

PAGE 27

IH16 0898+TB+SB+GRIT ORBITER FUSELAGE SURFACE

(RPOB15)

RN/L ( 2 ) = 4.620 HAH/HT( 1 ) = .050

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.600	.1329	.0939
.700	.0934	.0705
.800	.0649	.0872
.900	.0690	.0535
1.000	.0658	.0378

RN/L ( 2 ) = 4.620 HAH/HT( 2 ) = .900 MACH = 3.700 TO = 723.000 HO = 9494.500 ALPHA = .000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.088	.0298	
.100	.0264	
.125	.0499	
.150	.0568	
.175	.0755	
.200	.0886	
.250	.0992	
.300	.0946	
.350		.1071
.400		.1092
.500	.0690	.0616
.600	.0557	.0418
.700	.0417	.0319
.800	.0295	.0386
.900	.0298	.0264
1.000	.0283	.0184

RN/L ( 2 ) = 4.620 HAH/HT( 3 ) = 1.000 MACH = 3.700 TO = 723.000 HO = 9494.500 ALPHA = .000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.088	.0148	
.100	.0132	
.125	.0232	
.150	.0245	
.175	.0304	
.200	.0348	
.250	.0381	
.300	.0365	

DATE 08 JUN 75

TABULATED DATA - IH18

PAGE 28

IH18 0525+78+56+GRIT ORBITER FUSELAGE SURFACE

(RP0815)

RN/L ( 2 ) = 4.620 HAN/HT( 3 ) = 1.000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.350		.0423
.400		.0439
.500	.0302	.0274
.600	.0257	.0198
.700	.0198	.0152
.800	.0141	.0183
.900	.0140	.0131
1.000	.0132	.0091





DATE 08 JUN 75

TABULATED DATA - IH16

PAGE 29

IH16 0898 + CRIT

ORBITER FUSELAGE SURFACE

(RPOB16) ( 31 OCT 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
LREF = 474.8100 IN. YMRP = .0000 Y/BW  
BREF = 936.6820 IN. ZMRP = .0000 Z  
SCALE = .0060

## PARAMETRIC DATA

MACH = 3.700 ALPHA = .000  
BETA = .000 GRITNO = 25.000

RN/L ( 1 ) = 1.910 HAH/HT( 1 ) = .850 MACH = 3.700 TO = 725.000 HD = 3959.300 ALPHA = .000

## SECTION ( 1 ) ORBITER FUSELAGE

## DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

## X/L

.088	.0853
.100	.0563
.125	.0501
.150	.0342
.175	.0293
.200	.0282
.250	.0322
.300	.0317
.350	.0514
.375	.0524
.400	.0374
.500	.0371
.600	.0449
.700	.0533
.800	.0530
.900	.0497
1.000	.0488
1.025	.0432

RN/L ( 1 ) = 1.910 HAH/HT( 2 ) = .900 MACH = 3.700 TO = 725.000 HD = 3959.300 ALPHA = .000

## SECTION ( 1 ) ORBITER FUSELAGE

## DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

## X/L

.088	.0365
.100	.0316
.125	.0277
.150	.0187
.175	.0157
.200	.0149
.250	.0166
.300	.0159
.350	.0252
.375	.0255
.400	.0183
.500	.0176

IH16 0899 + GRIT

ORBITER FUSELAGE SURFACE

(RPO816)

RN/L ( 1 ) = 1.910 HAH/HT( 2 ) = .900

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.600	.0207	.0203
.700	.0243	.0251
.800	.0243	.0255
.900	.0227	.0202
1.000	.0224	.0185
1.025	.0196	

RN/L ( 1 ) = 1.910 HAH/HT( 3 ) = 1.000 MACH = 3.700 TO = 725.000 HO = 3959.300 ALPHA = .000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.088	.0194	
.100	.0168	
.125	.0148	
.150	.0098	
.175	.0082	
.200	.0077	
.250	.0084	
.300	.0080	
.350		.0125
.375		.0128
.400	.0090	.0130
.500	.0085	.0099
.600	.0100	.0101
.700	.0116	.0125
.800	.0117	.0129
.900	.0109	.0102
1.000	.0108	.0091
1.025	.0094	

RN/L ( 2 ) = 4.570 HAH/HT( 1 ) = .850 MACH = 3.700 TO = 731.000 HO = 9553.100 ALPHA = .000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.088	.0540	
.100	.0547	
.125	.0568	
.150	.0480	
.175	.0508	





DATE 08 JUN 78

TABULATED DATA - IH16

PAGE 31

IH16 0898 + GRIT

ORBITER FUSELAGE SURFACE

(RPOB16)

RN/L ( 2 ) = 4.570 HAW/HT( 1 ) = .850

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.200	.0599	
.250	.0894	
.300	.1040	
.350		.1385
.375		.1378
.400	.1257	.1517
.500	.1210	.1152
.600	.1208	.0971
.700	.0985	.0866
.800	.0727	.0701
.900	.0560	.0509
1.000	.0526	.0488
1.025	.0467	

RN/L ( 2 ) = 4.570 HAW/HT( 2 ) = .800 HACH = 3.700 TO = 731.000 HO = 9553.100 ALPHA = .000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.088	.0351	
.100	.0305	
.125	.0305	
.150	.0253	
.175	.0256	
.200	.0291	
.250	.0403	
.300	.0446	
.350		.0579
.375		.0576
.400	.0511	.0623
.500	.0490	.0490
.600	.0503	.0440
.700	.0437	.0407
.800	.0340	.0352
.900	.0270	.0262
1.000	.0257	.0245
1.025	.0230	

DATE 05 JUN 75

TABULATED DATA - IH16

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IH16 089B + GRIT

ORBITER FUSELAGE SURFACE

(RQ0816)

RN/L ( 2 ) = 4.570 HAW/HT( 3 ) = 1.000 MACH = 3.700 TO = 731.000 H0 = 9553.100 ALPHA = .000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE H/HREF

Y(BP) .0000 70.0000

X/L

.083	.0185
.100	.0182
.125	.0159
.150	.0129
.175	.0128
.200	.0144
.250	.0192
.300	.0208
.350	.0268
.375	.0266
.400	.0234
.500	.0224
.600	.0232
.700	.0207
.800	.0164
.900	.0133
1.000	.0127
1.025	.0114





DATE 08 JUN 75

TABULATED DATA - IH16

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IH16 089B

ORBITER WING SURFACE

(RPOH11) ( 31 OCT 74 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2680.0000 SQ.FT. XMRP = .6500 X/LB  
LREF = 474.8100 IN. YMRP = .0000 Y/BN  
BREF = 936.6820 IN. ZMRP = .0000 Z  
SCALE = .0050

MACH = 3.700 ALPHA = .000  
BETA = .000

RN/L ( 1 ) = 1.910 HAH/HT ( 1 ) = .850 MACH = 3.700 TO = 719.000 HO = 3921.400 ALPHA = .000

## SECTION ( 1 ) ORBITER WING

## DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

## X/C

.175		.0770	
.200		.0908	
.225	.0689		
.250	.0669		.1089
.300	.0667	.0735	.0959
.400	.0561	.0631	.0887
.500	.0474	.0535	.0737
.600	.0378	.0439	.0629
.700	.0295	.0392	.0519
.800	.0261	.0335	.0425
.850			.0378
.875		.0280	
.900	.0195		

RN/L ( 1 ) = 1.910 HAH/HT ( 2 ) = .900 MACH = 3.700 TO = 719.000 HO = 3921.400 ALPHA = .000

## SECTION ( 1 ) ORBITER WING

## DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

## X/C

.175		.0436	
.200		.0502	
.225	.0360		
.250	.0351		.0601
.300	.0353	.0413	.0539
.400	.0301	.0360	.0504
.500	.0255	.0306	.0427
.600	.0204	.0250	.0365
.700	.0159	.0224	.0309
.800	.0137	.0191	.0255
.850			.0227
.875		.0180	
.900	.0099		

DATE 05 JUN 75

TABULATED DATA - IH18

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IH18 0899

ORBITER WIND SURFACE

(RPQH11)

RN/L ( 1 ) = 1.810 HAH/HT( 3 ) = 1.000 MACH = 3.700 TO = 719.000 HO = 3921.400 ALPHA = .000

SECTION ( 1 ) ORBITER WIND

DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

X/C

.175		.0233	
.200		.0265	
.225	.0184		
.250	.0180		.0317
.300	.0182	.0221	.0287
.400	.0156	.0193	.0270
.500	.0133	.0165	.0232
.600	.0107	.0135	.0199
.700	.0082	.0121	.0171
.800	.0070	.0103	.0141
.850			.0126
.875		.0086	
.900	.0050		

RN/L ( 2 ) = 4.540 HAH/HT( 1 ) = .850 MACH = 3.700 TO = 727.000 HO = 9412.600 ALPHA = .000

SECTION ( 1 ) ORBITER WIND

DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

X/C

.175		.0669	
.200		.0793	
.225	.0627		
.250	.0612		.0900
.300	.0613	.0657	.0807
.400	.0534	.0607	.0735
.500	.0462	.0553	.0626
.600	.0373	.0502	.0527
.700	.0322	.0439	.0439
.800	.0316	.0358	.0351
.850			.0305
.875		.0276	
.900	.0220		





DATE 08 JUN 75

TABULATED DATA - IH1E

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IH1E 0898 ORBITER HING SURFACE (RPQH11)  
RN/L ( 2 ) = 4.540 HAH/HT ( 2 ) = .900 HACH = 3.700 TO = 727.000 HO = 9412.600 ALPHA = .000

SECTION ( 1 ) ORBITER HING

DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

X/C

.175		.0401	
.200		.0468	
.225	.0362		
.250	.0353		.0522
.300	.0356	.0393	.0475
.400	.0314	.0365	.0439
.500	.0275	.0333	.0392
.600	.0223	.0302	.0322
.700	.0193	.0268	.0276
.800	.0188	.0220	.0223
.850			.0185
.875		.0171	
.900	.0130		

RN/L ( 2 ) = 4.540 HAH/HT ( 3 ) = 1.000 HACH = 3.700 TO = 727.000 HO = 9412.600 ALPHA = .000

SECTION ( 1 ) ORBITER HING

DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

X/C

.175		.0223	
.200		.0256	
.225	.0196		
.250	.0191		.0283
.300	.0194	.0217	.0261
.400	.0172	.0203	.0243
.500	.0152	.0185	.0214
.600	.0124	.0168	.0181
.700	.0107	.0149	.0159
.800	.0104	.0124	.0129
.850			.0113
.875		.0099	
.900	.0072		

DATE 08 JUN 75

TABULATED DATA - IH16

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IH16 0898

ORBITER WING SURFACE

(RPOH12) ( 31 OCT 74 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/BW  
 BREF = 936.6820 IN. ZMRP = .0000 Z  
 SCALE = .0080

MACH = 3.700 ALPHA = -5.000  
 BETA = .000

RN/L ( 1 ) = 1.950 HAW/HT ( 1 ) = .850 MACH = 3.700 TO = 715.000 HO = 3953.800 ALPHA = -5.000

## SECTION ( 1 ) ORBITER WING

## DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

## X/C

.175		.0582	
.200		.0673	
.225	.0300		
.250	.0323		.0854
.300	.0313	.0546	.0750
.400	.0247	.0446	.0691
.500	.0201	.0374	.0565
.600	.0165	.0288	.0470
.700	.0148	.0241	.0384
.800	.0163	.0196	.0310
.850			.0276
.875		.0158	
.900	.0101		

RN/L ( 1 ) = 1.950 HAW/HT ( 2 ) = .800 MACH = 3.700 TO = 715.000 HO = 3953.800 ALPHA = -5.000

## SECTION ( 1 ) ORBITER WING

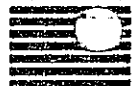
## DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

## X/C

.175		.0329	
.200		.0387	
.225	.0202		
.250	.0183		.0489
.300	.0179	.0319	.0435
.400	.0143	.0265	.0406
.500	.0117	.0224	.0339
.600	.0097	.0174	.0284
.700	.0087	.0147	.0237
.800	.0095	.0120	.0194
.850			.0173
.875		.0097	
.900	.0080		





DATE 06 JUN 75

TABULATED DATA - IH16

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IH16 089B

ORBITER HING SURFACE

(RPQW12)

RN/L ( 1 ) = 1.950 HAH/HT ( 3 ) = 1.000 MACH = 3.700 TO = 715.000 HO = 3953.800 ALPHA = -5.000

SECTION ( 1 ) ORBITER HING

DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

X/C

.175		.0180
.200		.0209
.225	.0107	
.250	.0098	.0264
.300	.0097	.0174
.400	.0078	.0146
.500	.0064	.0124
.600	.0053	.0097
.700	.0048	.0082
.800	.0052	.0068
.850		.0099
.875		.0055
.900	.0033	

RN/L ( 2 ) = 4.580 HAH/HT ( 1 ) = .850 MACH = 3.700 TO = 725.000 HO = 9441.100 ALPHA = -5.000

SECTION ( 1 ) ORBITER HING

DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

X/C

.175		.0518
.200		.0642
.225	.0358	
.250	.0351	.0820
.300	.0335	.0717
.400	.0294	.0433
.500	.0268	.0378
.600	.0255	.0303
.700	.0242	.0278
.800	.0311	.0247
.850		.0297
.875		.0241
.900	.0261	

ORIGINAL PAGE IS  
ON 3008 QUANTITY

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TABULATED DATA - IH16

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IH16 0898

ORBITER WING SURFACE

(RPQW12)

RN/L ( 2 ) = 4.560 HAW/HT ( 2 ) = .900 MACH = 3.700 TO = 725.000 HO = 9441.100 ALPHA = -5.000

SECTION ( 1 ) ORBITER WING

DEPENDENT VARIABLE W/HREF

2Y/B .4000 .6000 .8000

X/C

.175		.0308	
.200		.0372	
.225	.0208		
.250	.0204		.0465
.300	.0196	.0305	.0414
.400	.0171	.0260	.0388
.500	.0156	.0227	.0331
.600	.0147	.0184	.0274
.700	.0138	.0169	.0242
.800	.0173	.0149	.0201
.850			.0185
.875		.0144	
.900	.0143		

RN/L ( 2 ) = 4.560 HAW/HT ( 3 ) = 1.000 MACH = 3.700 TO = 725.000 HO = 9441.100 ALPHA = -5.000

SECTION ( 1 ) ORBITER WING

DEPENDENT VARIABLE W/HREF

2Y/B .4000 .6000 .8000

X/C

.175		.0170	
.200		.0202	
.225	.0113		
.250	.0111		.0249
.300	.0107	.0167	.0224
.400	.0094	.0144	.0212
.500	.0085	.0127	.0184
.600	.0080	.0102	.0153
.700	.0074	.0094	.0137
.800	.0092	.0083	.0115
.850			.0108
.875		.0080	
.900	.0075		





DATE 08 JUN 75

TABULATED DATA - IH16

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IH16 0839 + GRIT

ORBITER WING SURFACE

(RPOH16) ( 31 OCT 74 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2890.0000 SQ.FT. XMRP = .6500 X/LB  
LREF = 474.8100 IN. YMRP = .0000 Y/BH  
BREF = 938.6820 IN. ZMRP = .0000 Z  
SCALE = .0060

MACH = 3.700 ALPHA = .000  
BETA = .000 BRITNO = 25.000

RN/L ( 1 ) = 1.910 HAH/HT ( 1 ) = .850 MACH = 3.700 TO = 725.000 H0 = 3959.300 ALPHA = .000

## SECTION ( 1 ) ORBITER WING

## DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

## X/C

.175		.0685	
.200		.0840	
.225	.0667		
.250	.0644		.0994
.300	.0000	.0673	.0875
.400	.0529	.0571	.0795
.500	.0443	.0487	.0670
.600	.0347	.0393	.0562
.700	.0291	.0355	.0487
.800	.0268	.0290	.0372
.850			.0335
.875		.0226	
.900	.0172		

RN/L ( 1 ) = 1.910 HAH/HT ( 2 ) = .900 MACH = 3.700 TO = 725.000 H0 = 3959.300 ALPHA = .000

## SECTION ( 1 ) ORBITER WING

## DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

## X/C

.175		.0411	
.200		.0493	
.225	.0371		
.250	.0360		.0584
.300	.0000	.0402	.0522
.400	.0303	.0346	.0481
.500	.0257	.0297	.0413
.600	.0204	.0241	.0350
.700	.0172	.0219	.0296
.800	.0158	.0181	.0239
.850			.0218
.875		.0142	
.900	.0101		

IH16 0898 + ORIT

ORBITER WING SURFACE

(RPQH16)

RN/L ( 1 ) = 1.910 HAH/HT( 3 ) = 1.000 MACH = 3.700 TO = 725.000 HO = 3959.300 ALPHA = .000

## SECTION ( 1 ) ORBITER WING

DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

X/C

.175		.0229	
.200		.0270	
.225	.0197		
.250	.0191		.0320
.300	.0000	.0223	.0289
.400	.0163	.0194	.0268
.500	.0140	.0167	.0233
.600	.0112	.0136	.0199
.700	.0094	.0124	.0171
.800	.0087	.0103	.0139
.850			.0126
.875		.0081	
.900	.0056		

RN/L ( 2 ) = 4.570 HAH/HT( 1 ) = .850 MACH = 3.700 TO = 731.000 HO = 9553.100 ALPHA = .000

## SECTION ( 1 ) ORBITER WING

DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

X/C

.175		.0643	
.200		.0829	
.225	.0657		
.250	.0623		.0990
.300	.0000	.0883	.0878
.400	.0532	.0595	.0802
.500	.0457	.0527	.0680
.600	.0383	.0447	.0556
.700	.0309	.0386	.0467
.800	.0281	.0315	.0375
.850			.0328
.875		.0257	
.900	.0173		





DATE 06 JUN 75

TABULATED DATA - IH16

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IH16 0898 + CRIT

ORBITER WING SURFACE

(RPOH16)

RN/L ( 2 ) = 4.570 HAH/HT ( 2 ) = .900 MACH = 3.700 TO = 731.000 HO = 9553.100 ALPHA = .000

SECTION ( 1 ) ORBITER WING

DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

X/C

.175	.	.0362	
.200		.0475	
.225	.0366		
.250	.0348		.0557
.300	.0000	.0400	.0501
.400	.0306	.0356	.0469
.500	.0268	.0316	.0407
.600	.0217	.0269	.0340
.700	.0186	.0236	.0292
.800	.0169	.0197	.0239
.850			.0211
.875		.0163	
.900	.0105		

RN/L ( 2 ) = 4.570 HAH/HT ( 3 ) = 1.000 MACH = 3.700 TO = 731.000 HO = 9553.100 ALPHA = .000

SECTION ( 1 ) ORBITER WING

DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

X/C

.175		.0211	
.200		.0256	
.225	.0194		
.250	.0185		.0296
.300	.0000	.0219	.0270
.400	.0166	.0198	.0256
.500	.0147	.0175	.0226
.600	.0121	.0150	.0191
.700	.0103	.0133	.0167
.800	.0094	.0112	.0139
.850			.0123
.875		.0094	
.900	.0059		

DATE 05 JUN 75

TABULATED DATA - IH16

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IH16 0898 + T8 + S6 ORBITER WINDSHIELD SURFACE

(RPOC01) ( 31 OCT 74 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/BH  
 BREF = 936.6820 IN. ZMRP = .0000 Z  
 SCALE = .0060

HACH = 3.700 ALPHA = .000  
 BETA = .000 DELTAH = .175

RN/L ( 1 ) = 1.930 HAH/HT( 1 ) = .850 HACH = 3.700 TO = 719.000 HO = 3968.500 ALPHA = .000

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE H/HREF

X .0000

## TAP NO

1.000 .8931  
 2.000 -27.1026  
 3.000 6.5979  
 6.000 .8402

RN/L ( 1 ) = 1.930 HAH/HT( 2 ) = .900 HACH = 3.700 TO = 719.000 HO = 3968.500 ALPHA = .000

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE H/HREF

X .0000

## TAP NO

1.000 .1828  
 2.000 .1898  
 3.000 .1872  
 6.000 .1062

RN/L ( 1 ) = 1.930 HAH/HT( 3 ) = 1.000 HACH = 3.700 TO = 719.000 HO = 3968.500 ALPHA = .000

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE H/HREF

X .0000

## TAP NO

1.000 .0705  
 2.000 .0630  
 3.000 .0638  
 6.000 .0398





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TABULATED DATA - IH16

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IH16 0898 + TB + SB ORBITER WINDSHIELD SURFACE

(RPOC01)

RN/L ( 2 ) = 4.570 HAH/HT( 1 ) = .850 MACH = 3.700 TO = 724.000 HD = 9462.500 ALPHA = .000

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE H/HREF

X .0000

TAP NO

1.000 -1.0822

2.000 -.3421

3.000 -.3873

6.000 -.3765

RN/L ( 2 ) = 4.570 HAH/HT( 2 ) = .900 MACH = 3.700 TO = 724.000 HD = 9462.500 ALPHA = .000

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE H/HREF

X .0000

TAP NO

1.000 .2828

2.000 .3696

3.000 .3354

6.000 .1798

RN/L ( 2 ) = 4.570 HAH/HT( 3 ) = 1.000 MACH = 3.700 TO = 724.000 HD = 9462.500 ALPHA = .000

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE H/HREF

X .0000

TAP NO

1.000 .0803

2.000 .0716

3.000 .0709

6.000 .0455

## IH18 C898 + T8 + S8 ORBITER HINDSHIELD SURFACE

(RP0002) ( 31 OCT 74 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2880.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/BH  
 BREF = 936.6820 IN. ZMRP = .0000 Z  
 SCALE = .0060

MACH = 3.700 ALPHA = -5.000  
 BETA = .000 DELTA = .175

RN/L ( 1 ) = 1.990 HAH/HT( 1 ) = .850 MACH = 3.700 TO = 708.000 HO = 3961.000 ALPHA = -5.000

## SECTION ( 1 ) ORBITER HINDSHIELD

## DEPENDENT VARIABLE H/HREF

X .0000

TAP NO  
 1.000 42.5529  
 2.000 -.7451  
 3.000 -.9975  
 6.000 -3.0535

RN/L ( 1 ) = 1.990 HAH/HT( 2 ) = .900 MACH = 3.700 TO = 708.000 HO = 3961.000 ALPHA = -5.000

## SECTION ( 1 ) ORBITER HINDSHIELD

## DEPENDENT VARIABLE H/HREF

X .0000

TAP NO  
 1.000 .2391  
 2.000 .2540  
 3.000 .2415  
 6.000 .1351

RN/L ( 1 ) = 1.990 HAH/HT( 3 ) = 1.000 MACH = 3.700 TO = 708.000 HO = 3961.000 ALPHA = -5.000

## SECTION ( 1 ) ORBITER HINDSHIELD

## DEPENDENT VARIABLE H/HREF

X .0000

TAP NO  
 1.000 .0800  
 2.000 .0690  
 3.000 .0693  
 6.000 .0437





DATE 06 JUN 75

TABULATED DATA - IH16

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IH16 0899 + T8 + S6 ORBITER WINDSHIELD SURFACE

(RPCC02)

RN/L ( 2 ) = 4.560 HAH/HT( 1 ) = .850 MACH = 3.700 T0 = 725.000 H0 = 9453.000 ALPHA = -5.000

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE H/HREF

X .0000

TAP NO

1.000 -.7531

2.000 -.3426

3.000 -.3987

6.000 -.4165

RN/L ( 2 ) = 4.560 HAH/HT( 2 ) = .900 MACH = 3.700 T0 = 725.000 H0 = 9453.000 ALPHA = -5.000

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE H/HREF

X .0000

TAP NO

1.000 .4603

2.000 .6753

3.000 .5219

6.000 .2457

RN/L ( 2 ) = 4.560 HAH/HT( 3 ) = 1.000 MACH = 3.700 T0 = 725.000 H0 = 9453.000 ALPHA = -5.000

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE H/HREF

X .0000

TAP NO

1.000 .1090

2.000 .0973

3.000 .0929

6.000 .0588

DATE 08 JUN 75

TABULATED DATA - IH16

PAGE 45

IH16 0898

ORBITER CANOPY SURFACE

(RPOC11) ( 31 OCT 74 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2880.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/GH  
 BREF = 938.6820 IN. ZMRP = .0000 Z  
 SCALE = .0080

MACH = 3.700 ALPHA = .000  
 BETA = .000

RN/L ( 1 ) = 1.910 HAH/HT( 1 ) = .850 MACH = 3.700 TO = 719.000 HO = 3921.400 ALPHA = .000

## SECTION ( 1 ) ORBITER WINDSHIELD

## DEPENDENT VARIABLE H/HREF

X .0000

TAP NO  
 1.000 .7981  
 2.000 3.3267  
 3.000 2.1100  
 4.000 .4550  
 5.000 .7132  
 6.000 .7486

RN/L ( 1 ) = 1.910 HAH/HT( 2 ) = .800 MACH = 3.700 TO = 719.000 HO = 3921.400 ALPHA = .000

## SECTION ( 1 ) ORBITER WINDSHIELD

## DEPENDENT VARIABLE H/HREF

X .0000

TAP NO  
 1.000 .1837  
 2.000 .1877  
 3.000 .1848  
 4.000 .1184  
 5.000 .1548  
 6.000 .1139

RN/L ( 1 ) = 1.910 HAH/HT( 3 ) = 1.000 MACH = 3.700 TO = 719.000 HO = 3921.400 ALPHA = .000

## SECTION ( 1 ) ORBITER WINDSHIELD

## DEPENDENT VARIABLE H/HREF

X .0000

TAP NO  
 1.000 .0723  
 2.000 .0650  
 3.000 .0654  
 4.000 .0478  
 5.000 .0502  
 6.000 .0422





DATE 08 JUN 78

TABULATED DATA - IH16

PAGE 47

IH16 0898 ORBITER CANOPY SURFACE (RPOC11)  
RN/L ( 2 ) = 4.540 HAH/HT( 1 ) = .850 MACH = 3.700 TO = 727.000 HO = 9412.600 ALPHA = .000  
SECTION ( 1 ) ORBITER WINDSHIELD DEPENDENT VARIABLE H/HREF

X .0000

TAP NO  
1.000 4.9439  
2.000 -1.5288  
3.000 -2.7149  
4.000 1.3624  
5.000 2.1269  
6.000 .0000

RN/L ( 2 ) = 4.540 HAH/HT( 2 ) = .900 MACH = 3.700 TO = 727.000 HO = 9412.600 ALPHA = .000

SECTION ( 1 ) ORBITER WINDSHIELD DEPENDENT VARIABLE H/HREF

X .0000

TAP NO  
1.000 .3359  
2.000 .3809  
3.000 .3310  
4.000 .2080  
5.000 .2639  
6.000 .0000

RN/L ( 2 ) = 4.540 HAH/HT( 3 ) = 1.000 MACH = 3.700 TO = 727.000 HO = 9412.600 ALPHA = .000

SECTION ( 1 ) ORBITER WINDSHIELD DEPENDENT VARIABLE H/HREF

X .0000

TAP NO  
1.000 .1173  
2.000 .1089  
3.000 .1020  
4.000 .0772  
5.000 .0959  
6.000 .0000

DATE 05 JUN 75

TABULATED DATA - IH15

PAGE 48

IH15 0898

ORBITER CANOPY SURFACE

(RPOC12) ( 31 OCT 74 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/BH  
 BREF = 936.6920 IN. ZMRP = .0000 Z  
 SCALE = .0060

HACH = 3.700 ALPHA = -5.000  
 BETA = .000

RN/L ( 1 ) = 1.950 HAH/HT( 1 ) = .850 HACH = 3.700 TO = 715.000 HO = 3953.800 ALPHA = -5.000

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE H/HREF

X .0000

## TAP NO

1.000 2.2121  
 2.000 -2.1014  
 3.000 -4.5039  
 4.000 .9040  
 5.000 1.3055  
 6.000 2.3569

RN/L ( 1 ) = 1.950 HAH/HT( 2 ) = .900 HACH = 3.700 TO = 715.000 HO = 3953.800 ALPHA = -5.000

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE H/HREF

X .0000

## TAP NO

1.000 .2497  
 2.000 .2610  
 3.000 .2458  
 4.000 .1559  
 5.000 .1969  
 6.000 .1454

RN/L ( 1 ) = 1.950 HAH/HT( 3 ) = 1.000 HACH = 3.700 TO = 715.000 HO = 3953.800 ALPHA = -5.000

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE H/HREF

X .0000

## TAP NO

1.000 .0900  
 2.000 .0804  
 3.000 .0791  
 4.000 .0597  
 5.000 .0730  
 6.000 .0505





DATE 08 JUN 75

TABULATED DATA - IH18

PAGE 49

IH18 Q888

ORBITER CANOPY SURFACE

(RPQC12)

RN/L ( 2 ) = 4.580 HAW/HT ( 1 ) = .850 MACH = 3.700 TO = 725.000 HO = 9441.100 ALPHA = -5.000

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE H/HREF

X .0000

TAP NO

1.000	-.7740
2.000	-.3498
3.000	-.4135
4.000	-.8596
5.000	-1.0873
6.000	-.4100

RN/L ( 2 ) = 4.560 HAW/HT ( 2 ) = .900 MACH = 3.700 TO = 725.000 HO = 9441.100 ALPHA = -5.000

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE H/HREF

X .0000

TAP NO

1.000	.3950
2.000	.5247
3.000	.4192
4.000	.2224
5.000	.2718
6.000	.1869

RN/L ( 2 ) = 4.560 HAW/HT ( 3 ) = 1.000 MACH = 3.700 TO = 725.000 HO = 9441.100 ALPHA = -5.000

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE H/HREF

X .0000

TAP NO

1.000	.0982
2.000	.0875
3.000	.0834
4.000	.0632
5.000	.0777
6.000	.0478

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TABULATED DATA - IH16

PAGE 50

IH16 0898 + T8 + S6 ORBITER WINDSHIELD SURFACE

(RPOC13) ( 31 OCT 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XHRP = .6500 X/LB  
 LREF = 474.8100 IN. YHRP = .0000 Y/BW  
 BREF = 936.6820 IN. ZMRP = .0000 Z  
 SCALE = .0060

## PARAMETRIC DATA

MACH = 3.700 ALPHA = .000  
 BETA = .000 DELTAH = .069

RN/L ( 1 ) = 1.990 HAH/HT ( 1 ) = .850 MACH = 3.700 TO = 723.000 HO = 4087.200 ALPHA = .000

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE H/HREF

X .0000

TAP NO

1.000 .6081  
 2.000 1.6341  
 3.000 1.3065  
 6.000 .4484

RN/L ( 1 ) = 1.990 HAH/HT ( 2 ) = .900 MACH = 3.700 TO = 723.000 HO = 4087.200 ALPHA = .000

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE H/HREF

X .0000

TAP NO

1.000 .1558  
 2.000 .1536  
 3.000 .1545  
 6.000 .0914

RN/L ( 1 ) = 1.990 HAH/HT ( 3 ) = 1.000 MACH = 3.700 TO = 723.000 HO = 4087.200 ALPHA = .000

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE H/HREF

X .0000

TAP NO

1.000 .0628  
 2.000 .0546  
 3.000 .0559  
 6.000 .0352





DATE 08 JUN 75

TABULATED DATA - IH16

PAGE 51

IH16 089B + T8 + S8 ORBITER WINDSHIELD SURFACE

(RPQC13)

RN/L ( 2 ) = 4.550 HAH/HT( 1 ) = .850 MACH = 3.700 TO = 728.000 HO = 9498.400 ALPHA = .000

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE H/HREF

X .0000

TAP NO

1.000 -.0828

2.000 -.6138

3.000 -.7578

6.000 -.9748

RN/L ( 2 ) = 4.550 HAH/HT( 2 ) = .900 MACH = 3.700 TO = 728.000 HO = 9498.400 ALPHA = .000

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE H/HREF

X .0000

TAP NO

1.000 .2801

2.000 .3411

3.000 .3072

6.000 .1735

RN/L ( 2 ) = 4.550 HAH/HT( 3 ) = 1.000 MACH = 3.700 TO = 728.000 HO = 9498.400 ALPHA = .000

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE H/HREF

X .0000

TAP NO

1.000 .0906

2.000 .0830

3.000 .0806

6.000 .0517

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DATE 06 JUN 75

TABULATED DATA - IH16

PAGE 02

IH16 089B + TB + S6 ORBITER WINDSHIELD SURFACE

(RPOC14) ( 31 OCT 74 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/BH  
 BREF = 936.6820 IN. ZMRP = .0000 Z  
 SCALE = .0060

MACH = 3.700 ALPHA = -5.000  
 BETA = .000 DELTAH = .059

RN/L ( 1 ) = 2.000 HAH/HT( 1 ) = .850 MACH = 3.700 TO = 720.000 HO = 4102.800 ALPHA = -5.000

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE H/HREF

X .0000

TAP NO

1.000 1.8446  
 2.000 -1.1136  
 3.000 -1.7889  
 6.000 4.2632

RN/L ( 1 ) = 2.000 HAH/HT( 2 ) = .900 MACH = 3.700 TO = 720.000 HO = 4102.800 ALPHA = -5.000

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE H/HREF

X .0000

TAP NO

1.000 .1803  
 2.000 .1755  
 3.000 .1686  
 6.000 .1040

RN/L ( 1 ) = 2.000 HAH/HT( 3 ) = 1.000 MACH = 3.700 TO = 720.000 HO = 4102.800 ALPHA = -5.000

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE H/HREF

X .0000

TAP NO

1.000 .0643  
 2.000 .0529  
 3.000 .0529  
 6.000 .0352





DATE 06 JUN 75

TABULATED DATA - IH16

PAGE 53

IH16 0898 + T8 + S6 ORBITER WINDSHIELD SURFACE

(RPQC14)

RN/L ( 2 ) = 4.470 HAH/HT( 1 ) = .850 MACH = 3.700 TO = 723.000 HO = 9261.100 ALPHA = -5.000

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE H/HREF

X .0000

TAP NO

1.000 -.5061

2.000 -.2585

3.000 -.2919

6.000 -.3071

RN/L ( 2 ) = 4.470 HAH/HT( 2 ) = .900 MACH = 3.700 TO = 723.000 HO = 9261.100 ALPHA = -5.000

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE H/HREF

X .0000

TAP NO

1.000 .5394

2.000 .9551

3.000 .6673

6.000 .2593

RN/L ( 2 ) = 4.470 HAH/HT( 3 ) = 1.000 MACH = 3.700 TO = 723.000 HO = 9261.100 ALPHA = -5.000

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE H/HREF

X .0000

TAP NO

1.000 .1051

2.000 .0919

3.000 .0881

6.000 .0553

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TABULATED DATA - IH18

PAGE 54

IH18 089B+T8+S6+0R17 ORBITER CANOPY SURFACE

(RPQC15) ( 31 OCT 74 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/BH  
 BREF = 936.6820 IN. ZMRP = .0000 Z  
 SCALE = .0060

MACH = 3.700 ALPHA = .000  
 BETA = .000 DELTAH = .175  
 ORITNO = 25.000

RN/L ( 1 ) = 1.890 HAW/HT ( 1 ) = .050 MACH = 3.700 TO = 725.000 HO = 3909.300 ALPHA = .000

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE H/HREF

X .0000

## TAP NO

1.000 1.0259  
 2.000 134.3359  
 3.000 2.6745  
 6.000 .5653

RN/L ( 1 ) = 1.890 HAW/HT ( 2 ) = .900 MACH = 3.700 TO = 725.000 HO = 3909.300 ALPHA = .000

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE H/HREF

X .0000

## TAP NO

1.000 .1958  
 2.000 .1050  
 3.000 .1750  
 6.000 .1017

RN/L ( 1 ) = 1.890 HAW/HT ( 3 ) = 1.000 MACH = 3.700 TO = 725.000 HO = 3909.300 ALPHA = .000

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE H/HREF

X .0000

## TAP NO

1.000 .0748  
 2.000 .0617  
 3.000 .0608  
 6.000 .0385





DATE 08 JUN 75

TABULATED DATA - IH16

PAGE 55

IH16 089B+T8+S6+CRIT ORBITER CANOPY SURFACE

(RPQC15)

RN/L ( 2 ) = 4.620 HAH/HT ( 1 ) = .850 MACH = 3.700 TO = 723.000 HO = 9494.500 ALPHA = .000

SECTION ( 1 ) ORBITER WINDSHIELD DEPENDENT VARIABLE H/HREF

X .0000

TAP NO

1.000 -.7882  
2.000 -.4221  
3.000 -.5175  
6.000 -.7649

RN/L ( 2 ) = 4.620 HAH/HT ( 2 ) = .900 MACH = 3.700 TO = 723.000 HO = 9494.500 ALPHA = .000

SECTION ( 1 ) ORBITER WINDSHIELD DEPENDENT VARIABLE H/HREF

X .0000

TAP NO

1.000 .5629  
2.000 .6230  
3.000 .4671  
6.000 .2122

RN/L ( 2 ) = 4.620 HAH/HT ( 3 ) = 1.000 MACH = 3.700 TO = 723.000 HO = 9494.500 ALPHA = .000

SECTION ( 1 ) ORBITER WINDSHIELD DEPENDENT VARIABLE H/HREF

X .0000

TAP NO

1.000 .1276  
2.000 .1047  
3.000 .0972  
6.000 .0597

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DATE 08 JUN 75

TABULATED DATA - IH16

PAGE 58

IH16-0899 + GRIT

ORBITER CANOPY SURFACE

(RPOC16) ( 31 OCT 74 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2890.0000 SQ.FT. XHRP = .6500 X/LB  
 LREF = 474.8100 IN. YHRP = .0000 Y/BW  
 BREF = 938.6820 IN. ZHRP = .0000 Z  
 SCALE = .0080

MACH = 3.700 ALPHA = .000  
 BETA = .000 GRITNO = 25.000

RN/L ( 1 ) = 1.910 HAH/HT( 1 ) = .850 MACH = 3.700 TO = 725.000 HO = 3959.300 ALPHA = .000

## SECTION ( 1 ) ORBITER WINDSHIELD

## DEPENDENT VARIABLE H/HREF

X .0000

TAP NO  
 1.000 .9780  
 2.000 2.9236  
 3.000 1.5498  
 4.000 .5527  
 5.000 .6302  
 6.000 .0000

RN/L ( 1 ) = 1.910 HAH/HT( 2 ) = .800 MACH = 3.700 TO = 725.000 HO = 3959.300 ALPHA = .000

## SECTION ( 1 ) ORBITER WINDSHIELD

## DEPENDENT VARIABLE H/HREF

X .0000

TAP NO  
 1.000 .2316  
 2.000 .2269  
 3.000 .2122  
 4.000 .1486  
 5.000 .1778  
 6.000 .0000

RN/L ( 1 ) = 1.910 HAH/HT( 3 ) = 1.000 MACH = 3.700 TO = 725.000 HO = 3959.300 ALPHA = .000

## SECTION ( 1 ) ORBITER WINDSHIELD

## DEPENDENT VARIABLE H/HREF

X .0000

TAP NO  
 1.000 .0917  
 2.000 .0798  
 3.000 .0778  
 4.000 .0608  
 5.000 .0730  
 6.000 .0000





DATE 06 JUN 75

TABULATED DATA - IH18

PAGE 57

IH18 0898 + GRIT

ORBITER CANOPY SURFACE

(RPQC18)

RN/L ( 2 ) = 4.570 HAW/HT( 1 ) = .850 MACH = 3.700 TO = 731.000 HO = 9553.100 ALPHA = .000

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE H/HREF

X .0000

TAP NO

1.000 -1.3398

2.000 -.5486

3.000 -.7662

4.000 -2.8014

5.000 18.4678

6.000 .0000

RN/L ( 2 ) = 4.570 HAW/HT( 2 ) = .900 MACH = 3.700 TO = 731.000 HO = 9553.100 ALPHA = .000

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE H/HREF

X .0000

TAP NO

1.000 .3665

2.000 .3628

3.000 .2906

4.000 .2101

5.000 .2246

6.000 .0000

RN/L ( 2 ) = 4.570 HAW/HT( 3 ) = 1.000 MACH = 3.700 TO = 731.000 HO = 9553.100 ALPHA = .000

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE H/HREF

X .0000

TAP NO

1.000 .1033

2.000 .0839

3.000 .0773

4.000 .0667

5.000 .0755

6.000 .0000

1H16 0898 + T8 + S6 EXTERNAL TANK SURFACE

( RPQT01 ) ( 31 OCT 74 )

## REFERENCE DATA

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SREF = 2690.0000 SQ.FT.  XMRP = .6500 X/LB
LREF = 474.8100 IN.      YMRP = .0000 Y/BW
BREF = 936.6820 IN.      ZMRP = .0000 Z
SCALE = .0060
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### PARAMETRIC DATA

HACH	=	3.700	ALPHA	=	.000
BETA	=	.000	DELTAH	=	.175

RY/L (1) = 1.930 HAW/HT(1) = .850 MACH = 3.700 TO = 719.000 HQ = 3968.500 ALPHA = .000

## SECTION (1) EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	{		}	~	DEL	SPC	CR	LF	HT	VT	FF	SH	ESC	SI	SO	STX	ETX	END	BRK	BS	BS2	BS4	BS8	BS16	BS32	BS64	BS128	BS256	BS512	BS1024	BS2048	BS4096	BS8192	BS16384	BS32768	BS65536	BS131072	BS262144	BS524288	BS1048576	BS2097152	BS4194304	BS8388608	BS16777216	BS33554432	BS67108864	BS134217728	BS268435456	BS536870912	BS1073741824	BS2147483648	BS4294967296	BS8589934592	BS17179869184	BS34359738368	BS68719476736	BS137438953472	BS274877906944	BS549755813888	BS1099511627776	BS2199023255552	BS4398046511104	BS8796093022208	BS17592186044416	BS35184372088832	BS70368744177664	BS140737488355328	BS281474976710656	BS562949953421312	BS1125899906842624	BS2251799813685248	BS4503599627370496	BS9007199254740992	BS18014398509481984	BS36028797018963968	BS72057594037927936	BS144115188075855872	BS288230376151711744	BS576460752303423488	BS1152921504606846976	BS2305843009213693952	BS4611686018427387904	BS9223372036854775808	BS18446744073709551616	BS36893488147419103232	BS73786976294838206464	BS147573952589676412928	BS295147905179352825856	BS590295810358705651712	BS1180591620717411303424	BS2361183241434822606848	BS4722366482869645213696	BS9444732965739290427392	BS18889465931478580854784	BS37778931862957161709568	BS75557863725914323419136	BS151115727451828646838272	BS302231454903657293676544	BS604462909807314587353088	BS1208925819614629174706176	BS2417851639229258349412352	BS4835703278458516698824704	BS9671406556917033397649408	BS19342813113834066795298816	BS38685626227668133590597632	BS77371252455336267181195264	BS154742504910672534362390528	BS309485009821345068724781056	BS618970019642690137449562112	BS1237940039285380274899124224	BS2475880078570760549798248448	BS4951760157141521099596496896	BS9903520314283042199192993792	BS19807040628566084398385987584	BS39614081257132168796771975168	BS79228162514264337593543950336	BS158456325028528675187087900672	BS316912650057057350374175801344	BS633825300114114700748351602688	BS1267650600228229401496703205376	BS2535301200456458802993406410752	BS5070602400912917605986812821504	BS10141204801825835211973625643008	BS20282409603651670423947251286016	BS40564819207303340847894502572032	BS81129638414606681695789005144064	BS162259276829213363391578010288128	BS324518553658426726783156020576256	BS649037107316853453566312041152512	BS1298074214633706907132624082305024	BS2596148429267413814265248164610048	BS5192296858534827628530496329220096	BS10384593717069655257060992658440192	BS20769187434139310514121985316880384	BS41538374868278621028243970633760768	BS83076749736557242056487941267521536	BS166153499473114484112975882535043072	BS332306998946228968225951765070086144	BS664613997892457936451903530140172288	BS1329227995784915872903807060280344576	BS2658455991569831745807614120560689152	BS5316911983139663491615228241121378304	BS10633823966279326983230456482242756608	BS21267647932558653966460912964485513216	BS42535295865117307932921825928971026432	BS85070591730234615865843651857942052864	BS170141183460469231731687303715884105728	BS340282366920938463463374607431768211456	BS680564733841876926926749214863536422912	BS1361129467683753853853498429727072845824	BS2722258935367507707706996859454145691648	BS5444517870735015415413993718908291383296	BS10889035741470030830827987437816582766592	BS21778071482940061661655974875633165533184	BS
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X/L

.000									- .3497
.020									- .8839
.060									1 .1389
.100									.2141
.150									.0825
.200				.0350					.0412
.250				.0241					.0149
.275				.0532	.0355				
.300			.0813	.2279	.0913				.0190
.325				.6399	.2091	.0507			
.350			.2583	.3623	.2504	.0918			.0508
.375						.1118			.1393
.400	.0614	.1632	.1084	.1070	.1090	.1321	.2448	1.0157	
.425								1.0736	
.450				.0448	.0607	.1574	.3859	.0000	
.475								.1918	
.500		.1005	.0475	.0383	.0777	.1902	.2113	.1440	
.525								.1103	
.550				.0749	.1158	.1764	.1492	.0912	
.575								.1414	
.600	.1222	.0622	.0601	.1037	.1441	.1348	.1737	.2234	
.625								.2818	
.650				.0918	.1174		.1821	.2639	
.675								.2371	
.700		.0532	.0600	.0911	.1081	.1112	.1415	.2117	
.750				.0947			.1216	.1536	
.800	.0944	.0661	.0710	.1033	.1436	.1029	.1080	.0000	
.850				.0998				.1050	
.900		.0971	.1050	.1467	.1421	.1082	.0781	.0919	



DATE 06 JUN 75

**TABULATED DATA - 1H16**

PAGE 59

1H1B 089B + TB + SB    EXTERNAL TANK SURFACE

(RPQTOI)

RN/L ( 1 ) = 1.930    HAW/HT ( 2 ) = .800    MACH = 3.700    TO = 719.000    HO = 3968.500    ALPHA = .000

## SECTION ( 1 ) EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

**X/L**

[illegible]

BN/L (1) = 1.930    HAH/HT(3) = 1.000    HACH = 3.700    TO = 719.000    HO = 3968.500    ALPHA = .000

## SECTION ( 1 ) EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

**X/L**

.000			.1793
.020			.1050
.050			.0727
.100			.0432
.150			.0242
.200	.0120		.0128
.250	.0076		.0040
.275	.0152	.0103	

1H16 089B + TB + SB EXTERNAL TANK SURFACE

(RPQT01)

RN/L ( 1 ) = 1.930      HAH/HT( 3 ) = 1.000

## SECTION ( 1 )EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

FBI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X'L

.300			.0211	.0372	.0227			.0047
.325				.0570	.0385	.0136		
.350			.0450	.0537	.0444	.0225		.0111
.375						.0271		.0259
.400	.0138	.0341	.0286	.0295	.0299	.0309	.0406	.0523
.425								.0615
.450				.0137	.0176	.0338	.0530	.0000
.475								.0374
.500		.0247	.0140	.0115	.0224	.0413	.0426	.0311
.525								.0254
.550				.0201	.0303	.0397	.0339	.0210
.575								.0269
.600	.0288	.0173	.0169	.0262	.0342	.0323	.0347	.0347
.625								.0402
.650				.0248	.0293		.0347	.0393
.675								.0372
.700		.0154	.0167	.0428	.0274	.0269	.0295	.0351
.750				.0257			.0270	.0298
.800	.0195	.0172	.0191	.0269	.0324	.0244	.0243	.0000
.850				.0255				.0210
.900		.0202	.0247	.0325	.0314	.0240	.0178	.0163

```

RN/L ( 2) = 4.570 HAR/HT( 1) = .850 MACH = 3.700 TO = 724.000 HO = 9462.500 ALPHA = .000

```

## SECTION 11 EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

**X/L**

[illegible]





DATE 06 JUN 75

TABULATED DATA - IH18

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IH18 0898 + T8 + S6 EXTERNAL TANK SURFACE

(RPQT01)

RN/L ( 2 ) = 4.570 HAH/HT ( 1 ) = .850

SECTION ( 1 ) EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 87.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L

.500	.0942	.0475	.0298	.0842	.2668	.4040	.4773
.525							.3674
.550			.0566	.1015	.2064	.2997	.3458
.575							1.0300
.600	.1105	.0902	.0888	.1088	.1393	.2023	.5088
.625							.7589
.650			.1283	.1734		.2565	.4005
.675							.3383
.700		.1332	.1428	.1392	.2234	.1643	.2039
.750				.1502		.1501	.2371
.800	.1085	.1465	.1152	.1413	.2203	.1720	.1266
.850			.1302				.0000
.900	.1425	.1706	.2409	.1808	.1149	.0855	.1108

RN/L ( 2 ) = 4.570 HAH/HT ( 2 ) = .900 MACH = 3.700 TO = 724.000 HO = 9462.500 ALPHA = .000

SECTION ( 1 ) EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 87.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L

.000							-.5489
.020							.7640
.060							.2249
.100							.0936
.150							.0437
.200			.0200				.0229
.250			.0125				.0106
.275			.0273	.0187			
.300		.0378	.1009	.0473			.0195
.325			.1903	.0909	.0287		
.350		.1019	.1448	.1111	.0509		.0446
.375					.0637		.1116
.400	.0246	.0568	.0509	.0537	.0558	.1586	.4082
.425							.2317
.450			.0238	.0363	.1037	.1565	.0000
.475							.1153
.500		.0474	.0268	.0178	.0456	.1009	.1210
.525							.1081
.550			.0313	.0531	.057	.1035	.1023
.575							.1422
.600	.0509	.0438	.0424	.0525	.0653	.0827	.1373
.625							.1146
.650			.0596	.0727		.0919	.1028
.675							.0975

IH16 0898 + TB + SB EXTERNAL TANK SURFACE

(RPQT01)

RN/L ( 2 ) = 4.570 HAH/HT( 2 ) = .800

SECTION ( 1 ) EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L

.700	.0558	.0604	.0618	.0830	.0705	.0780	.0847
.750			.0854			.0641	.0556
.800	.0454	.0594	.0517	.0622	.0837	.0564	.0000
.850			.0587				.0481
.900	.0592	.0680	.0879	.0754	.0535	.0412	.0382

RN/L ( 2 ) = 4.570 HAH/HT( 3 ) = 1.000 MACH = 3.700 TO = 724.000 HO = 9462.500 ALPHA = .000

SECTION ( 1 ) EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L

.000							.1557
.020							.0943
.060							.0667
.100							.0403
.150							.0224
.200			.0112				.0124
.250			.0068				.0054
.275			.0140	.0097			
.300		.0190	.0387	.0224			.0092
.325			.0587	.0384	.0140		
.350		.0426	.0536	.0444	.0240		.0194
.375					.0297		.0411
.400	.0126	.0279	.0259	.0274	.0281	.0339	.0544
.425							.0710
.450			.0130	.0189	.0427	.0590	.0000
.475							.0485
.500		.0238	.0143	.0097	.0238	.0450	.0510
.525							.0448
.550			.0165	.0272	.0395	.0448	.0425
.575							.0522
.600	.0245	.0218	.0210	.0258	.0316	.0379	.0510
.625							.0472
.650			.0288	.0336		.0402	.0430
.675							.0410
.700		.0258	.0280	.0293	.0368	.0328	.0349
.750				.0307			.0299
.800	.0210	.0271	.0246	.0294	.0374	.0320	.0268
.850				.0280			
.900		.0273	.0309	.0397	.0348	.0259	.0202





TABULATED DATA - 1H16

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1418 0898 + TB + SB EXTERNAL TANK SURFACE

( RPT02 ) ( 31 OCT 74 )

### REFERENCE DATA

```

SREF = 2690.0000 SQ.FT.  XMRP = .6500 X/LB
LREF = 474.8100 IN.      YMRP = .0000 Y/BW
BREF = 936.6820 IN.      ZMRP = .0000 Z
SCALE = .0060

```

### PARAMETRIC DATA

MACH	=	3.700	ALPHA	=	-5.000
BETA	=	.000	DELTAH	=	.175

RV/L (1) =	1.990	HAW/HT(1) =	.850	MACH =	3.700	TO =	708.000	HO =	3961.000	ALPHA =	-5.000
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## SECTION (1) EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L

.000									- .2854
.020									- .4622
.060									-2.3210
.100									.3660
.150									.1196
.200				.0356					.0568
.250				.0267					.0447
.275				.0610	.0420				
.300			.0675	.3040	.1138				.0305
.325				1.1365	.3199	.0712			
.350			.1986	.4472	.5365	.1473			.0753
.375						.1988			.2242
.400	.0390	.0834	.0701	.1157	.1747	.0000	.4827	-1.8295	
.425								14.3531	
.450				.0513	.1074	.3041	.6062	.0000	
.475								.2262	
.500		.0497	.0248	.0414	.1323	.3227	.2531	.1578	
.525								.1244	
.550				.0754	.1784	.2141	.1770	.0988	
.575								.1180	
.600	.1023	.0448	.0440	.1263	.1718	.1661	.1960	.1533	
.625								.1972	
.650				.1308	.1813		.1985	.2191	
.675								.2230	
.700		.0667	.0561	.1232	.2145	.1761	.1748	.2196	
.750				.1214			.1615	.1853	
.800	.1121	.0844	.0783	.1135	.1795	.1771	.1565	.0000	
.850				.1023				.1483	
.900		.0876	.1072	.1670	.1608	.1409	.1310	.1261	

1H16 Q89B + T8 + S6    EXTERNAL TANK SURFACE

(RPQT02)

RN/L ( 1 ) = 1.990    HAW/HT( 2 ) = .900    MACH = 3.700    TO = 708.000    HQ = 3961.000    ALPHA = -5.000

### SECTION ( I )EXTERNAL TANK

## DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

**X/L**

.000								-2.6913
.020								.6508
.060								.2628
.100								.1183
.150								.0569
.200				.0212				.0312
.250				.0152				.0235
.275				.0316	.0224			
.300			.0431	.0921	.0520			.0148
.325				.1576	.1029	.0346		
.350			.0818	.1299	.1307	.0640		.0319
.375						.0819		.0745
.400	.0193	.0418	.0379	.0586	.0806	.0000	.1237	.1881
.425								.1999
.450				.0285	.0529	.1017	.1447	.0000
.475								.0862
.500		.0261	.0140	.0230	.0628	.1080	.0951	.0662
.525								.0335
.550				.0390	.0745	.0845	.0718	.0429
.575								.0471
.600	.0405	.0228	.0232	.0586	.0734	.0691	.0732	.0564
.625								.0679
.650				.0589	.0721		.0726	.0728
.675								.0743
.700		.0321	.0282	.0556	.0803	.0694	.0666	.0743
.750				.0554			.0640	.0682
.800	.0468	.0445	.0389	.0533	.0731	.0688	.0623	.0000
.850				.0499				.0559
.900		.0448	.0546	.0735	.0690	.0593	.0542	.0487

RN/L ( 1 ) = 1.990    HAW/HT( 3 ) = 1.000    MACH = 3.700    TO = 708.000    HO = 3961.000    ALPHA = -5.000

## SECTION (1) EXTERNAL TANK

## DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 27.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L

.000			.1697
.020			.1119
.060			.0814
.100			.0502
.150			.0293
.200	.0118		.0164
.250	.0082		.0120
.275	.0181	.0118	





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TABULATED DATA - IH18

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IH18 0898 + T8 + S8 EXTERNAL TANK SURFACE

(RPQT02)

RN/L ( 1 ) = 1.990 HAH/HT( 3 ) = 1.000

SECTION ( 1 ) EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L

.300			.0214	.0385	.0249		.0073
.325				.0579	.0437	.0170	
.350			.0376	.0537	.0520	.0300	.0148
.375						.0376	.0319
.400	.0098	.0209	.0197	.0295	.0388	.0000	.0587
.425							.0673
.450				.0151	.0263	.0436	.0000
.475							.0385
.500		.0133	.0075	.0122	.0306	.0463	.0306
.525							.0250
.550				.0199	.0344	.0383	.0201
.575							.0214
.600	.0183	.0115	.0119	.0283	.0342	.0318	.0249
.625							.0294
.650				.0281	.0327		.0312
.675						.0320	.0319
.700		.0157	.0141	.0265	.0357	.0313	.0298
.750				.0265			.0290
.800	.0215	.0217	.0194	.0258	.0334	.0310	.0282
.850				.0247			.0249
.900		.0226	.0275	.0347	.0322	.0275	.0250

RN/L ( 2 ) = 4.560 HAH/HT( 1 ) = .850 MACH = 3.700 TO = 725.000 HD = 9453.000 ALPHA = -5.000

SECTION ( 1 ) EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L

.000							-.2396
.020							-.3276
.060							-.8900
.100							.4312
.150							.1119
.200				.0328			.0530
.250				.0236			.0404
.275				.0573	.0393		
.300			.0802	.5157	.1099		.0488
.325				-2.1068	.3364	.0721	
.350			.2174	.8333	.8135	.1493	.1568
.375						.1848	1.0043
.400	.0368	.0873	.0628	.1132	.1671	.0000	5.9218
.425							-4.1613
.450				.0530	.1251	.5681	.8078
.475							.3713

ORIGINAL PAGE IS  
OF POOR QUALITY

1416 0898 + 78 + 56 EXTERNAL TANK SURFACE

(RPQT02)

RM/L ( 2 ) = 4.560 HAW/HT( 1 ) = .850

SECTION ( 1 )EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L

.500		.0529	.0250	.0585	.1863	.3927	.4053	.4403
.525								.4116
.550				.0849	.1591	.2236	.3534	.4336
.575								.4885
.600	.1075	.0568	.0458	.1035	.1633	.2183	.3810	.4506
.625								.3980
.650				.1149	.2464		.2876	.3770
.675								.3065
.700		.0941	.0678	.1146	.2663	.2399	.2300	.2536
.750				.1223			.1955	.1974
.800	.1103	.0981	.0784	.1150	.2420	.2108	.1816	.0000
.850				.1083				.1538
.900		.0960	.1062	.1908	.1951	.1411	.1402	.1366

RN/L ( 2 ) = 4.560    HAW/HT ( 2 ) = .900    MACH = 3.700    TO = 725.000    HD = 9453.000    ALPHA = -5.000

### SECTION (1) EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 67.5000 90.0000112.5000135.0000157.5000180.0000

**X/L**

[illegible]





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TABULATED DATA - IH16

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IH16 0898 + T8 + S6 EXTERNAL TANK SURFACE

(RP0T02)

RN/L ( 2 ) = 4.560 HAW/HT( 2 ) = .900

SECTION ( 1 ) EXTERNAL TANK DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L

.700		.0447	.0340	.0538	.0836	.0894	.0872	.0934
.750				.0571			.0797	.0780
.800	.0503	.0479	.0404	.0552	.0910	.0830	.0752	.0900
.850				.0531				.0655
.900		.0476	.0527	.0803	.0812	.0637	.0629	.0594

RN/L ( 2 ) = 4.560 HAW/HT( 3 ) = 1.000 MACH = 3.700 TO = 725.000 HO = 9453.000 ALPHA = -5.000

SECTION ( 1 ) EXTERNAL TANK DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L

.000								.1727
.020								.1064
.060								.0769
.100								.0484
.150								.0275
.200				.0114				.0163
.250				.0078				.0121
.275				.0159	.0115			
.300			.0214	.0444	.0247			.0118
.325				.0670	.0451	.0178		
.350			.0388	.0588	.0567	.0312		.0256
.375						.0380		.0521
.400	.0108	.0237	.0184	.0301	.0378	.0000	.0673	.0927
.425								.0799
.450				.0165	.0289	.0524	.0647	.0000
.475								.0513
.500		.0157	.0083	.0174	.0379	.0513	.0524	.0513
.525								.0500
.550				.0231	.0345	.0398	.0489	.0484
.575								.0513
.600	.0242	.0154	.0135	.0267	.0334	.0379	.0493	.0499
.625								.0495
.650				.0272	.0388		.0434	.0477
.675								.0445
.700		.0218	.0170	.0261	.0408	.0397	.0389	.0413
.750				.0276			.0365	.0360
.800	.0241	.0237	.0205	.0270	.0405	.0375	.0347	.0000
.850				.0263				.0305
.900		.0237	.0263	.0372	.0375	.0304	.0299	.0279

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TABULATED DATA - IH16

EXTERNAL TANK SURFACE

(RPQT03) ( 31 OCT 74 )

### PARAMETRIC DATA

MACH = 3.700 ALPHA = .000  
BETA = .000

SCALE = .0050  
RN/L ( 1 ) = 1.540 HAH/HT( 1 ) = .850 MACH = 3.700 TO = 718.000 HO = 3988.000 ALPHA = .000

## SECTION ( I )EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

[illegible]



1418 78

EXTERNAL TANK SURFACE

(RPQT03)

RN/L ( 1 ) = 1.840 HAW/HT ( 2 ) = .900 MACH = 3.700 TO = 716.000 HD = 3969.000 ALPHA = .000

## SECTION (1) EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L

.000								-13.1933
.005								2.4242
.010								1.1746
.020								.4358
.040								.3099
.060								.2023
.080								.1352
.100								.0943
.125								.0584
.150								.0458
.175								.0338
.200				.0208				.0236
.250				.0152				.0171
.275				.0150	.0154			
.300			.0139	.0141	.0144			.0164
.325				.0136	.0139	.0144		
.350			.0133	.0133	.0134	.0139		.0148
.375						.0139		.0151
.400	.0125	.0123	.0126	.0139	.0136	.0000	.0140	.0143
.425								.0139
.450				.0126	.0124	.0129	.0142	.0000
.475								.0144
.500		.0123	.0118	.0125	.0130	.0130	.0143	.0143
.525								.0142
.550				.0123	.0115	.0126	.0134	.0144
.575								.0138
.600	.0105	.0093	.0105	.0109	.0108	.0119	.0137	.0140
.625								.0137
.650			.0070	.0080	.0091	.0097	.0116	.0136
.675								.0127
.700		.0064	.0071	.0069	.0077	.0089	.0094	.0118
.750			.0069	.0073	.0064	.0067	.0080	.0093
.800	.0093	.0086	.0085	.0063	.0081	.0077	.0077	.0080
.850				.0103	.0098	.0093	.0076	.0088
.900		.0184	.0193	.0192	.0184	.0175	.0124	.0108
.935								.0151
.974								.0221

**TABULATED DATA - IH16**

EXTERNAL TANK SURFACE

(RPQT03)

RN/L (1) =	1.840	HAN/HT(3) =	1.000	MACH =	3.700	TO =	718.000	HO =	3968.000	ALPHA =	.000
------------	-------	-------------	-------	--------	-------	------	---------	------	----------	---------	------

## SECTION (1) EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

[illegible]





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(RPQT03)

[illegible]

**THIS TB**

### EXTERNAL TANK SURFACE

(RPT03)

RN/L ( 2 ) = 4.640 HAH/HT( 2 ) = .800 HACH = 3.700 TO = 720.000 HD = 9516.000 ALPHA = .000

## SECTION (1) EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L

[illegible]



1416 78

### EXTERNAL TANK SURFACE

(RPQT03)

RN/L ( 2 ) = 4.640 HAW/HT( 3 ) = 1.000 MACH = 3.700 TO = 720.000 HD = 9318.000 ALPHA = .000

## SECTION (1) EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI	.0000	45.0000	67.5000	90.0000	112.5000	135.0000	157.5000	180.0000
-----	-------	---------	---------	---------	----------	----------	----------	----------

X/L

[illegible]

TABULATED DATA - IH15

(RPQT04) 1 31 OCT 74 1

EXTERNAL TANK SURFACE

### PARAMETRIC DATA

MACH	=	3.700	ALPHA	=	-5.000
BETA	=	.000			

```

RN/L ( 1 ) = 1.940 HAW/HT( 1 ) = .850 MACH = 3.700 TO = 718.000 HD = 3970.200 ALPHA = -5.000

```

## DEPENDENT VARIABLE H/H-REF

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

[illegible]





DATE 08 JUN 75

TABULATED DATA - IH18

PAGE 75

IH18 TS

EXTERNAL TANK SURFACE

(RPQT84)

RN/L (1) = 1.940 HAM/HT (2) = .900 MACH = 3.700 TO = 718.000 HO = 3970.200 ALPHA = -5.000

SECTION (1) EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L

.000									3.2510
.005									1.6541
.010									1.0555
.020									.4695
.040									.3482
.060									.2307
.080									.1578
.100									.1160
.125									.0740
.150									.0575
.175									.0445
.200				.0229					.0328
.250				.0175					.0282
.275				.0152	.0185				
.300			.0118	.0150	.0181				.0242
.325				.0145	.0194	.0201			
.350			.0121	.0143	.0178	.0228			.0241
.375						.0203			.0239
.400	.0049	.0099	.0134	.0163	.0185	.0000	.0236		.0238
.425									.0258
.450				.0163	.0188	.0221	.0262		.0000
.475									.0279
.500		.0091	.0125	.0162	.0201	.0220	.0252		.0265
.525									.0262
.550				.0163	.0201	.0221	.0280		.0258
.575									.0263
.600	.0074	.0052	.0095	.0148	.0185	.0224	.0270		.0272
.625									.0304
.650			.0080	.0136	.0195	.0226	.0285		.0305
.675									.0305
.700		.0046	.0074	.0125	.0193	.0247	.0287		.0311
.750			.0053	.0117	.0182	.0240	.0289		.0298
.800	.0134	.0084	.0067	.0113	.0207	.0267	.0309		.0000
.850				.0095	.0182	.0252	.0283		.0337
.900		.0234	.0165	.0151	.0214	.0280	.0322		.0353
.935									.0275
.974									.0325

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OF POOR QUALITY

DATE 08 JUN 78

TABLED DATA - THIS

PAGE 76

1418 T8

### EXTERNAL TANK SURFACE

(FPOT04)

FN/L ( 1 ) = 1.840 HAW/HT( 3 ) = 1.000 HACH = 3.700 TO = 718.000 HO = 3970.200 ALPHA = -5.000

## SECTION 11 EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI	.0000	45.0000	87.5000	80.0000	112.5000	135.0000	157.5000	180.0000
-----	-------	---------	---------	---------	----------	----------	----------	----------

X/L

[illegible]





PAGE 77

(RFO704)

SECTION :	DEPENDENT VARIABLE
EXTERNAL TANK	H/HREF

X/L

[illegible]

DATE 05 JUN 75

**TABULATED DATA - 1H16**

PAGE 78

1416 T8

### EXTERNAL TANK SURFACE

(RPQT04)

RN/L (2) = 4.650    HAW/HT(2) = .600    MACH = 3.700    TO = 724.000    HD = 9592.000    ALPHA = -5.000

### SECTION (1) EXTERNAL TANK

DEPENDENT VARIABLE N/HREF

PHI 0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L

[illegible]





DATE 05 JUN 75

TABULATED DATA - IH18

PAGE 79

IH18 T8

EXTERNAL TANK SURFACE

(RPQT04)

RN/L ( 2 ) = 4.630 HAW/HT( 3 ) = 1.000 MACH = 3.700 TO = 724.000 HO = 9592.000 ALPHA = -5.000

SECTION ( 1 ) EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L

.000								.1583
.005								.1252
.010								.1237
.020								.1062
.040								.0948
.060								.0782
.080								.0616
.100								.0490
.125								.0344
.150								.0280
.175								.0228
.200				.0118				.0167
.250				.0085				.0138
.275				.0064	.0101			
.300		.0066		.0083	.0100			.0129
.325				.0080	.0096	.0113		
.350		.0068		.0082	.0096	.0113		.0117
.375					.0108			.0123
.400	.0018	.0042	.0063	.0086	.0100	.0000	.0118	.0117
.425								.0117
.450				.0082	.0096	.0108	.0125	.0000
.475								.0120
.500		.0039	.0061	.0080	.0102	.0114	.0125	.0123
.525								.0119
.550				.0082	.0096	.0111	.0126	.0118
.575								.0120
.600	.0039	.0033	.0055	.0078	.0099	.0112	.0129	.0122
.625								.0127
.650			.0052	.0075	.0094	.0111	.0124	.0128
.675								.0128
.700		.0032	.0051	.0075	.0095	.0116	.0122	.0129
.750			.0049	.0078	.0096	.0115	.0128	.0130
.800	.0113	.0040	.0051	.0079	.0103	.0120	.0133	.0000
.850				.0080	.0102	.0121	.0129	.0140
.900		.0134	.0090	.0088	.0106	.0119	.0139	.0136
.935								.0118
.974								.0133

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OF POOR QUALITY

1H18 0293 + T8 + S6 EXTERNAL TANK SURFACE

(RPQT13) ( 31 OCT 74 )

## REFERENCE DATA

```
SREF = 2690.0000 SQ.FT.  XHRP = .6500 X/LB
LREF = 474.8100 IN.      YHRP = .0000 Y/BW
BREF = 936.6820 IN.      ZHRP = .0000 Z
SCALE = .0060
```

### PARAMETRIC DATA

MACH	=	3.700	ALPHA	=	.000
BETA	=	.000	DELTAH	=	.069

RN/L ( 1 ) = 1.990    HAW/HT( 1 ) = .850    MACH = 3.700    TO = 723.000    HD = 4087.200    ALPHA = .000

## SECTION ( 1 )EXTERNAL TANK

## DEPENDENT VARIABLE H/H-REF

PHI	.0000	45.0000	67.5000	90.0000	112.5000	135.0000	157.5000	180.0000
-----	-------	---------	---------	---------	----------	----------	----------	----------

X/L									
.000									-.3789
.020									-1.2203
.060									.7653
.100									.1762
.150									.0717
.200				.0308					.0353
.250				.0199					.0126
.275				.0475	.0326				
.300			.0730	.2085	.0802				.0248
.325				.5696	.1957	.0560			
.350			.2403	.3073	.2147	.1037			.1518
.375						.1445			26.6480
.400	.0543	.1464	.1025	.0942	.1017	.0000	.4617		.9477
.425									.2499
.450				.0399	.0686	.1702	.1819		.0000
.475									.0891
.500		.0931	.0450	.0374	.0782	.1459	.1448		.1134
.525									.1545
.550				.0592	.0922	.1197	.1586		.1922
.575									.2103
.600	.0988	.0558	.0503	.0847	.1075	.1076	.1456		.2068
.625									.1910
.650				.0803	.0979		.1143		.1632
.675									.1345
.700		.0502	.0567	.0807	.1069	.0800	.0848		.1130
.750				.0879			.0641		.0818
.800	.0889	.0574	.0625	.0652	.1111	.0733	.0544		.0000
.850				.0816					.0640
.900		.0825	.0979	.1244	.1125	.0881	.0565		.0593





DATE 08 JUN 73

TABULATED DATA - IH16

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IH16 0890 + T8 + S8 EXTERNAL TANK SURFACE

(RPQT13)

RN/L ( 1 ) = 1.990 HAH/HT( 2 ) = .900 MACH = 3.700 T0 = 723.000 H0 = 4087.200 ALPHA = .000

SECTION ( 1 ) EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L

.000							2.8064
.020							.3385
.060							.1691
.100							.0810
.150							.0403
.200			.0189				.0207
.250			.0116				.0066
.275			.0257	.0179			
.300		.0377	.0786	.0435			.0121
.325			.1370	.0806	.0287		
.350		.0848	.1134	.0885	.0502		.0809
.375					.0657		.1830
.400	.0280	.0573	.0538	.0507	.0535	.0000	.1312
.425							.0968
.450			.0234	.0391	.0814	.0830	.0000
.475							.0436
.500		.0479	.0257	.0218	.0450	.0752	.0692
.525							.0521
.550			.0327	.0486	.0615	.0709	.0637
.575							.0730
.600	.0481	.0305	.0279	.0439	.0546	.0539	.0659
.625							.0770
.650			.0427	.0500		.0532	.0744
.675							.0662
.700		.0275	.0309	.0434	.0538	.0411	.0571
.750				.0471			.0501
.800	.0400	.0301	.0332	.0447	.0556	.0372	.0322
.850			.0427				.0379
.900		.0385	.0465	.0588	.0538	.0415	.0273
						.0265	.0247

RN/L ( 1 ) = 1.990 HAH/HT( 3 ) = 1.000 MACH = 3.700 T0 = 723.000 H0 = 4087.200 ALPHA = .000

SECTION ( 1 ) EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L

.000							.1575
.020							.0952
.060							.0661
.100							.0369
.150							.0215
.200			.0107				.0113
.250			.0084				.0034
.275			.0134	.0094			

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**TABULATED DATA - IH16**

1H18 0899 + T8 + S6      EXTERNAL TANK SURFACE

(RPQT13)

RN/L ( 1 ) = 1.890 HAH/HT( 3 ) = 1.000

## SECTION ( I )EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L									
.300			.0192	.0350	.0216				.0050
.325				.0544	.0371	.0145			
.350			.0429	.0501	.0407	.0247			.0277
.375						.0314			.0613
.400	.0127	.0323	.0274	.0264	.0275	.0000	.0540		.0647
.425									.0435
.450				.0129	.0210	.0399	.0398		.0000
.475									.0217
.500		.0243	.0139	.0119	.0243	.0391	.0338		.0251
.525									.0293
.550				.0172	.0258	.0312	.0339		.0326
.575									.0343
.600	.0239	.0161	.0149	.0224	.0275	.0270	.0314		.0341
.625									.0335
.650				.0220	.0252		.0257		.0302
.675									.0265
.700		.0144	.0182	.0225	.0270	.0209	.0205		.0237
.750				.0244			.0162		.0183
.800	.0190	.0154	.0171	.0229	.0278	.0187	.0136		.0000
.850				.0219					.0129
.900		.0186	.0227	.0285	.0283	.0202	.0129		.0114

```

RN/L ( 2 ) = 4.530 HAW/HT( 1 ) = .850 MACH = 3.700 TO = 728.000 HD = 5498.400 ALPHA = .000

```

## SECTION ( I )EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

[illegible]





DATE 06 JAN 75

TABULATED DATA - IH16

PAGE 83

IH16 0888 + T8 + S8 EXTERNAL TANK SURFACE

(RPQT13)

RN/L ( 2 ) = 4.550 HAH/HT( 1 ) = .850

SECTION ( 1 ) EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L							
.500		.0508	.0472	.0408	.0885	.2093	.2870
.525							.3591
.550				.0832	.1008	.1717	.3839
.575							.4299
.600	.1008	.0854	.0842	.1190	.1349	.1688	.3054
.625							.3464
.650				.1161	.1473		.2702
.675						.1750	.2071
.700		.1254	.1288	.1209	.1649	.1141	.1597
.750				.1157			.1056
.800	.0920	.1297	.0979	.1063	.1477	.1044	.0762
.850				.1013			.0916
.900		.1268	.1338	.1734	.1283	.0987	.0672

RN/L ( 2 ) = 4.550 HAH/HT( 2 ) = .900 MACH = 3.700 T0 = 728.000 H0 = 8498.400 ALPHA = .000

SECTION ( 1 ) EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L							
.000							-.9246
.020							.5215
.060							.1989
.100							.0878
.150							.0418
.200			.0202				.0219
.250			.0110				.0094
.275			.0260	.0182			
.300		.0360	.1055	.0455			.0178
.325			.1809	.0914	.0294		
.350		.1025	.1376	.1067	.0562		.0699
.375					.0804		.3139
.400	.0000	.0590	.0583	.0528	.0580	.0000	.1771
.425							.2439
.450			.0239	.0448	.1237	.1135	.1231
.475							.0000
.500		.0484	.0275	.0245	.0502	.0935	.1047
.525							.1058
.550			.0449	.0548	.0788	.1182	.1193
.575							.1219
.600	.0504	.0441	.0478	.0598	.0668	.0757	.1169
.625							.1051
.650			.0585	.0691		.0748	.1067
.675							.0961

IH16 0898 + TB + SB EXTERNAL TANK SURFACE

(RP0113)

RN/L ( 2 ) = 4.550 HAH/HT ( 2 ) = .900

## SECTION ( 1 ) EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L							
.700		.0573	.0600	.0595	.0742	.0581	.0520
.750				.0579			.0399
.800	.0434	.0590	.0488	.0537	.0701	.0521	.0355
.850				.0517			.0330
.900		.0582	.0609	.0752	.0622	.0490	.0484

RN/L ( 2 ) =	4.550	HAH/HT ( 3 ) =	1.000	MACH =	3.700	TO =	728.000	HO =	9498.400	ALPHA =	.000
--------------	-------	----------------	-------	--------	-------	------	---------	------	----------	---------	------

## SECTION ( 1 ) EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L								
.000								.1807
.020								.0968
.060								.0671
.100								.0401
.150								.0222
.200				.0116				.0122
.250				.0081				.0050
.275				.0137	.0097			
.300			.0187	.0431	.0225			.0090
.325				.0847	.0400	.0149		
.350			.0483	.0557	.0460	.0289		.0313
.375						.0360		.0810
.400	.0000	.0300	.0283	.0278	.0283	.0000	.0652	.0786
.425								.0518
.450				.0134	.0238	.0523	.0497	.0000
.475								.0334
.500		.0251	.0150	.0136	.0269	.0444	.0481	.0444
.525								.0491
.550				.0233	.0268	.0379	.0486	.0485
.575								.0476
.600	.0252	.0224	.0241	.0300	.0331	.0360	.0455	.0447
.625								.0420
.650				.0294	.0335		.0349	.0373
.675								.0326
.700		.0274	.0280	.0285	.0354	.0278	.0258	.0292
.750				.0290			.0205	.0231
.800	.0211	.0283	.0244	.0270	.0342	.0280	.0182	.0000
.850				.0261				.0163
.900		.0280	.0292	.0353	.0307	.0244	.0233	.0204



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(RPOT14) ( 31 OCT 74 )

### PARAMETRIC DATA

MACH	=	3.700	ALPHA	=	-5.000
BETA	=	.000	DELTAH	=	.069

```

RN/L ( 1 ) = 2.000  HAH/HT( 1 ) = .850  HACH = 3.700  TO = 720.000  HO = 4102.800  ALPHA = -5.000

```

DEPENDENT VARIABLE H/HREF

PHI	.0000	45.0000	67.5000	90.0000	112.5000	135.0000	157.5000	180.0000
-----	-------	---------	---------	---------	----------	----------	----------	----------

X/L									
.000									-.2530
.020									-.4087
.060									-1.9190
.100									.3574
.150									.1147
.200				.0351					.0546
.250				.0302					.0412
.275				.0649	.0518				
.300			.0879	.3375	.1307				.0316
.325				2.7868	.4077	.1004			
.350			.1985	.5035	.6526	.2146			.1891
.375						.3234			-.8430
.400	.0000	.0819	.0784	.1245	.2001	.0000-83.7112			-1.1477
.425									.5667
.450				.0564	.1244	.3761	.3131		.0000
.475									.1348
.500		.0518	.0310	.0570	.1646	.2623	.1764		.1128
.525									.0994
.550				.0979	.1818	.1803	.1615		.0952
.575									.1042
.600	.0880	.0491	.0542	.1237	.1902	.1635	.1673		.1185
.625									.1336
.650				.1223	.2028		.1464		.1370
.675									.1327
.700		.0661	.0600	.1179	.1968	.1425	.1193		.1260
.750				.1154			.1024		.1053
.800	.1070	.0900	.0819	.1102	.1550	.1335	.1074		.0000
.850				.1023					.1017
.900		.0848	.1051	.1583	.1480	.1235	.1009		.0883

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DATE 08 JUN 75

TABULATED DATA - IH16

PAGE 08

IH16 0899 + T8 + S8 EXTERNAL TANK SURFACE

(RPQT14)

RN/L ( 1 ) = 2.000 HAW/HT( 2 ) = .900 MACH = 3.700 T8 = 720.000 H0 = 4102.800 ALPHA = -5.000

SECTION ( 1 ) EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 87.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L

.000									-4.0474
.020									.5657
.060									.2399
.100									.1114
.150									.0558
.200				.0209					.0300
.250				.0170					.0218
.275				.0327	.0268				
.300		.0423		.0875	.0557			.0158	
.325				.1467	.1032	.0449			
.350		.0772		.1227	.1235	.0784		.0658	
.375						.0899		.1893	
.400	.0000	.0399	.0409	.0599	.0828	.0000	.1775	.2159	
.425								.1299	
.450				.0309	.0590	.1080	.1055	.0000	
.475								.0587	
.500		.0268	.0174	.0311	.0716	.0949	.0738	.0500	
.525								.0441	
.550				.0473	.0742	.0759	.0851	.0416	
.575								.0436	
.600	.0384	.0247	.0277	.0552	.0747	.0661	.0542	.0474	
.625								.0517	
.650				.0538	.0745		.0578	.0524	
.675								.0514	
.700		.0310	.0288	.0523	.0742	.0599	.0504	.0502	
.750				.0521			.0453	.0441	
.800	.0455	.0410	.0398	.0508	.0653	.0565	.0464	.0000	
.850				.0493				.0411	
.900		.0421	.0520	.0585	.0642	.0534	.0438	.0369	

RN/L ( 1 ) = 2.000 HAW/HT( 3 ) = 1.000 MACH = 3.700 T8 = 720.000 H0 = 4102.800 ALPHA = -5.000

SECTION ( 1 ) EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 87.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L

.000								.1398
.020								.0981
.060								.0738
.100								.0469
.150								.0275
.200				.0115				.0159
.250				.0091				.0112
.275				.0184	.0138			





TABLED DATA - 1416

PAGE 87

1H16 0898 + T8 + S6      EXTERNAL TANK SURFACE

(RPQT:4)

RN/L ( 1 ) = 2.000 HAW/HT( 3 ) = 1.000

## SECTION 11 EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

**PRI** .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

.300			.0208	.0353	.0259			.0077
.325				.0507	.0414	.0213		
.350			.0347	.0488	.0471	.0345		.0288
.375						.0420		.0549
.400	.0000	.0187	.0209	.0294	.0380	.0000	.0590	.0539
.425								.0511
.450				.0162	.0288	.0445	.0454	.0000
.475								.0276
.500		.0136	.0092	.0183	.0336	.0417	.0341	.0237
.525								.0209
.550				.0232	.0340	.0345	.0297	.0195
.575								.0202
.600	.0168	.0124	.0140	.0262	.0338	.0301	.0287	.0215
.625								.0232
.650				.0254	.0329		.0262	.0234
.675								.0231
.700		.0151	.0147	.0248	.0330	.0277	.0234	.0228
.750				.0248			.0214	.0204
.800	.0211	.0202	.0197	.0245	.0303	.0262	.0217	.0000
.850				.0242				.0187
.900		.0210	.0258	.0321	.0301	.0250	.0205	.0170

RM/L ( 2 ) = 4.470 HAH/HT( 1 ) = .850 MACH = 3.700 TO = 723.000 HQ = 9261.100 ALPHA = -5.000

## SECTION 1.1 EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PRI	.0000	45.0000	67.5000	90.0000	112.5000	135.0000	157.5000	180.0000
-----	-------	---------	---------	---------	----------	----------	----------	----------

.000								- .1906
.020								-.2602
.060								-.5784
.100								.6780
.150								.1207
.200				.0354				.0590
.250				.0285				.0425
.275				.0688	.0513			
.300			.0925	1.0296	1.1459			.0575
.325				-.0264	.6631	.1084		
.350			.2504	1.2718	1.4630	.2707		.4920
.375						.4210		-.3333
.400	.0430	.0988	.0735	.1266	.2180	.0000	-.6956	-.5246
.425								2.7460
.450				.0589	.1737	-3.5254	1.0021	.0000
.475								.3089

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DATE 06 JUN 78

TABULATED DATA - IH16

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IH16 0898 + T8 + S8 EXTERNAL TANK SURFACE

(RPQT14)

RN/L ( 2 ) = 4.470 HAW/HT ( 2 ) = .900

SECTION ( 1 ) EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 67.5000 80.0000 112.5000 135.0000 157.5000 180.0000

X/L

.700	.0493	.0380	.0659	.1069	.0976	.0831	.0935
.750			.0663			.0683	.0737
.800	.0549	.0512	.0460	.0614	.0903	.0784	.0700
.850			.0593				.0794
.900	.0515	.0624	.0898	.0843	.0693	.0788	.0904

RN/L ( 2 ) = 4.470 HAW/HT ( 3 ) = 1.000 MACH = 3.700 TO = 723.000 HO = 9261.100 ALPHA = -5.000

SECTION ( 1 ) EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 67.5000 80.0000 112.5000 135.0000 157.5000 180.0000

X/L

.000							.1676
.020							.1058
.060							.0771
.100							.0490
.150							.0278
.200			.0115				.0167
.250			.0084				.0111
.275			.0172	.0128			
.300		.0228	.0458	.0273			.0121
.325			.0671	.0479	.0216		
.350		.0401	.0577	.0359	.0371		.0371
.375					.0458		.0841
.400	.0109	.0238	.0203	.0305	.0389	.0000	.0757
.425							.0607
.450			.0171	.0327	.0612	.0554	.0000
.475							.0365
.500		.0164	.0082	.0197	.0420	.0557	.0508
.525							.0425
.550			.0254	.0376	.0469	.0531	.0455
.575							.0494
.600	.0242	.0164	.0154	.0284	.0431	.0444	.0512
.625							.0500
.650			.0303	.0442		.0424	.0465
.675							.0421
.700		.0230	.0183	.0301	.0433	.0402	.0353
.750				.0306			.0304
.800	.0254	.0243	.0223	.0285	.0387	.0339	.0307
.850			.0283				.0331
.900		.0245	.0284	.0390	.0367	.0307	.0336

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DATE 06 JUN 75

TABULATED DATA - IH16

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IH16 0898+T8+SS+GRIT EXTERNAL TANK SURFACE

(RPT15) ( 31 OCT 74 )

## REFERENCE DATA

SREF = 2880.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/BW  
 BREF = 936.6820 IN. ZMRP = .0000 Z  
 SCALE = .0060

## PARAMETRIC DATA

MACH = 3.700 ALPHA = .000  
 BETA = .000 DELTAH = .175  
 GRITNO = 25.000

RN/L ( 1 ) = 1.890 HAW/HT ( 1 ) = .850 MACH = 3.700 TO = 725.000 HD = 3909.300 ALPHA = .000

## SECTION ( 1 ) EXTERNAL TANK

## DEPENDENT VARIABLE H/AREF

RHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L									
.000									-.3303
.020									-.9042
.060									1.2394
.100									.4954
.150									.1975
.200				.0563					.0686
.250				.0421					.0409
.275				.0830	.0534				
.300			.1630	.3695	.1081				.0304
.325				1.9508	.2159	.0733			
.350			.3413	.1153	.2094	.1318			.1223
.375						.1590			.3584
.400	.0000	.1128	.0938	.1028	.1240	.0000	.6732	1.7628	
.425									.9469
.450				.0414	.0768	.2041	.3452	.0000	
.475									.2678
.500		.0711	.0350	.0358	.1012	.1988	.2152	.2181	
.525									.1774
.550				.0572	.1116	.1488	.1782	.1945	
.575									.2831
.600	.1057	.0594	.0541	.0931	.1139	.1381	.2164	.2802	
.625									.2339
.650				.0898	.0962		.1539	.2045	
.675									.1833
.700		.0659	.0717	.0876	.0990	.0945	.1205	.1560	
.750				.1096			.0984	.1183	
.800	.0900	.0883	.0812	.1184	.1282	.0836	.0850	.0000	
.850				.1109					.0932
.900		.1114	.1232	.1507	.1189	.0847	.0672	.0832	



DATE 08 JUN 75

**TABULATED DATA - 1916**

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THIS OBSB+TG+SB+GRIT EXTERNAL TANK SURFACE

(RPQT, 5)

RN/L ( 1 ) = 1.890    HAH/HT( 2 ) = .900    MACH = 3.700    TD = 725.000    HD = 3909.300    ALPHA = .000

## SECTION ( I ) EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PRI	.0000	45.0000	67.5000	90.0000	112.5000	135.0000	157.5000	180.0000
-----	-------	---------	---------	---------	----------	----------	----------	----------

X/L

.000								-20.2856
.020								.4069
.060								.1970
.100								.1436
.150								.0853
.200				.0327				.0368
.250				.0243				.0215
.275				.0435	.0296			
.300			.0742	.1129	.0541			.0146
.325				.1917	.0929	.0374		
.350			.1265	.1431	.0919	.0825		.0470
.375						.0733		.1042
.400	.0000	.0594	.0530	.0573	.0646	.0000	.1518	.1772
.425								.1739
.450				.0249	.0430	.0887	.1295	.0000
.475								.1097
.500		.0394	.0209	.0214	.0552	.0901	.0968	.0939
.525								.0791
.550				.0323	.0577	.0727	.0809	.0800
.575								.0992
.600	.0469	.0323	.0302	.0479	.0580	.0670	.0913	.1004
.625								.0921
.650				.0475	.0503		.0710	.0824
.675								.0752
.700		.0340	.0385	.0475	.0506	.0488	.0579	.0571
.750				.0261			.0487	.0535
.800	.0368	.0422	.0421	.0581	.0614	.0423	.0421	.0000
.850				.0549				.0390
.900		.0502	.0579	.0693	.0564	.0405	.0318	.0334

RN/L ( 1 ) = 1.890    HAH/HT( 3 ) = 1.000    HACH = 3.700    TO = 725.000    HO = 3909.300    ALPHA = .000

## SECTION ( I )EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI	.0000	45.0000	67.5000	90.0000	112.5000	135.0000	157.5000	180.0000
-----	-------	---------	---------	---------	----------	----------	----------	----------

**X/L**

.000			.1693
.020			.1043
.060			.0734
.100			.0593
.150			.0399
.200	.0178		.0191
.250	.0131		.0110
.275	.0223	.0156	

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1H18 0898+T8+S6+GRIT EXTERNAL TANK SURFACE

(RPQT:5)

RN/L (1) = 1.890 HAW/HT(3) = 1.000

## SECTION (1) EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L								
.300		.0355	.0473	.0271				.0072
.325			.0684	.0434	.0189			
.350		.0560	.0619	.0433	.0304			.0211
.375					.0353			.0431
.400	.0000	.0305	.0284	.0304	.0330	.0000	.0595	.0833
.425								.6660
.450			.0139	.0229	.0416	.0575		.0000
.475								.0503
.500		.0208	.0116	.0118	.0289	.0430	.0481	.0438
.525								.0375
.550			.0173	.0293	.0360	.0388		.0368
.575								.0431
.600	.0222	.0169	.0161	.0243	.0293	.0330	.0423	.0440
.625								.0416
.650			.0247	.0258			.0342	.0375
.675								.0345
.700		.0173	.0200	.0248	.0257	.0248	.0284	.0313
.750				.0284			.0243	.0256
.800	.0167	.0207	.0214	.0288	.0301	.0213	.0209	.0000
.850				.0274				.0180
.900		.0239	.0281	.0333	.0275	.0198	.0155	.0152

RN/L ( 2 ) = 4.620    HAW/HT ( 1 ) = .850    MACH = 3.700    TO = 723.000    HD = 9494.500    ALPHA = .000

## SECTION (1) EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 67.5000 90.0000112.5000135.0000157.5000180.0000

[illegible]





DATE 06 JUN 75

TABULATED DATA - IH16

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IH16 0898+18+56+0RIT EXTERNAL TANK SURFACE

(RPQT15)

RN/L ( 2 ) = 4.620 HAW/HT( 1 ) = .850

SECTION ( 1 ) EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L

.500	.0931	.0481	.0448	.1345	.3148	.3987	.3979
.525							.7149
.550			.0776	.1528	.2946	.6387	1.1670
.575							.6386
.600	.1415	.1026	.1086	.1362	.1943	.2940	.4999
.625							.5044
.650			.1911	.2516		.3186	.3920
.675							.2848
.700	.2005	.1515	.2625	.2665	.1542	.1979	.2371
.750			.2577			.1479	.1684
.800	.1520	.1029	.1191	.2315	.2530	.1563	.1331
.850				.1855			.1357
.900	.1707	.2444	.3171	.1801	.1114	.0974	.1176

RN/L ( 2 ) = 4.620 HAW/HT( 2 ) = .900 MACH = 3.700 TO = 723.000 H0 = 9494.500 ALPHA = .000

SECTION ( 1 ) EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L

.000							-.6902
.020							.8446
.050							.2512
.100							.2095
.150							.1325
.200			.0464				.0530
.250			.0342				.0338
.275			.0579	.0388			
.300		.1058	.1856	.0671			.0373
.325			.3104	.1103	.0499		
.350		.1641	.1840	.1132	.0768		.0592
.375					.0791		.1366
.400	.0000	.0681	.0570	.0648	.0739	.0000	.1827
.425							.2111
.450			.0293	.0479	.1062	.1570	.0000
.475							.1402
.500		.0464	.0258	.0253	.0670	.1154	.1230
.525							.1393
.550			.0395	.0704	.1024	.1528	.1602
.575							.1389
.600	.0564	.0465	.0485	.0808	.0788	.0983	.1227
.625							.1261
.650			.0756	.0877		.1921	.1136
.675							.0962

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TABULATED DATA - THIS

(RFQT15)

1H18 0898+TB+SB+GRIT EXTERNAL TANK SURFACE

RN/L ( 2 ) = 4.620 HAW/HT( 2 ) = .900

## SECTION 1: EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L							
.700		.0627	.0613	.0909	.0901	.0657	.0777
.750				.0931			.0640
.800	.0526	.0685	.0529	.0855	.0900	.0641	.0589
.850				.0756			
.900		.0659	.0846	.1028	.0725	.0509	.0447

RN/L ( 2 ) = 4.620    HAW/HT ( 3 ) = 1.000    MACH = 3.700    TO = 723.000    HO = 9494.500    ALPHA = .000

### SECTION ( 1 )EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PWT .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L									
.000									.2057
.020									.1062
.060									.0730
.100									.0667
.150									.0523
.200				.0232					.0257
.250				.0175					.0172
.275				.0278	.0195				
.300			.0455	.0655	.0317				.0185
.325				.0860	.0480	.0241			
.350			.0646	.0695	.0499	.0363			.0267
.375						.0369			.0520
.400	.0000	.0333	.0290	.0329	.0357	.0000	.0650		.0745
.425									.0717
.450				.0158	.0244	.0463	.0614		.0000
.475									.0558
.500									.0499
.525			.0232	.0137	.0135	.0334	.0509	.0517	.9534
.550					.0199	.0338	.0444	.0580	.0588
.575									.0542
.600	.0256	.0222	.0230	.0287	.0360	.0421	.0505		.0504
.625									.0504
.650				.0342	.0381		.0433		.0469
.675									.0414
.700			.0302	.0280	.0394	.0368	.0306	.0351	.0381
.750					.0409			.0300	.0322
.800	.0228	.0304	.0251	.0378	.0393	.0294	.0278		.0000
.850				.0346					.0258
.900		.0228	.0387	.0437	.0330	.0244	.0215		.0219





(RPQT18)

DEPENDENT VARIABLE H/HREF

X/L

.000								-2.0103
.005								-30.9180
.010								2.1576
.020								.4829
.040								.3444
.060								.2148
.080								.1585
.100								.1485
.125								.1211
.150								.0865
.175								.0595
.200				.0333				.0375
.250				.0208				.0000
.275				.0198	.0213			
.300			.0193	.0191	.0204			.0209
.325				.0117	.0201	.0204		
.350			.0195	.0179	.0202	.0204		.0185
.375						.0201		.0190
.400	.0173	.0187	.0191	.0207	.0223	.0205	.0183	.0181
.425								.0180
.450				.0199	.0228	.0205	.0202	.0179
.475								.0199
.500		.0202	.0203	.0204	.0260	.0229	.0212	.0207
.525								.0213
.550				.0228	.0285	.0276	.0234	.0213
.575								.0238
.600	.0251	.0257	.0268	.0259	.0345	.0308	.0266	.0254
.625								.0269
.650			.0301	.0302	.0382	.0357	.0311	.0306
.675								.0340
.700		.0373	.0393	.0386	.0435	.0428	.0375	.0376
.750			.0441	.0443	.0467	.0488	.0451	.0447
.800	.0518	.0473	.0469	.0479	.0492	.0491	.0520	.0000
.850				.0483	.0480	.0514	.0540	.0562
.900		.0483	.0483	.0481	.0470	.0460	.0514	.0529
.935								.0381
.974								.0218





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(RPQT18)

DEPENDENT VARIABLE H/HREF

X/L

[illegible]

DATE 08 JUN 75

**TABULATED DATA - 1916**

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**IH18 T8 + GRIT**

### EXTERNAL TANK SURFACE

(RPT18)

RN/L ( 2 ) = 4.580 HAW/HT( 1 ) = .850 HACH = 3.700 TO = 729.000 HO = 9574.600 ALPHA = .000

## SECTION ( 1 )EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI	.0000	45.0000	67.5000	90.0000	112.5000	135.0000	157.5000	180.0000
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**X/L**

[illegible]



DATE 08 JUN 75

TABULATED DATA - 1H16

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INIB TB + GRIT

### EXTERNAL TANK SURFACE

(RPQT18)

RN/L ( 2 ) = 4.580    HAW/HT ( 2 ) = .800    MACH = 3.700    TO = 728.000    HO = 9574.600    ALPHA = .000

## SECTION 1: EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L

.000								- .7175
.005								-1.0930
.010								-3.0291
.020								.7119
.040								.4238
.060								.2348
.080								.1642
.100								.1872
.125								.1660
.150								.1214
.175								.0785
.200				.0433				.0487
.250				.0292				.0000
.275				.0306	.0305			
.300			.0337	.0332	.0327			.0331
.325				.0199	.0370	.0366		
.350			.0478	.0435	.0435	.0447		.0429
.375						.0510		.0513
.400	.0551	.0573	.0579	.0610	.0599	.0000	.0551	.0539
.425								.0551
.450				.0583	.0582	.0547	.0580	.0000
.475								.0540
.500		.0559	.0561	.0553	.0586	.0553	.0570	.0552
.525								.0530
.550				.0539	.0534	.0515	.0552	.0517
.575								.0518
.600	.0534	.0524	.0535	.0529	.0523	.0511	.0546	.0518
.625								.0535
.650			.0489	.0492	.0484	.0480	.0517	.0528
.675								.0525
.700		.0491	.0505	.0481	.0497	.0506	.0508	.0523
.750			.0478	.0493	.0478	.0486	.0507	.0512
.800	.0504	.0471	.0477	.0478	.0502	.0499	.0528	.0000
.850				.0477	.0477	.0499	.0496	.0540
.900		.0476	.0480	.0482	.0486	.0463	.0493	.0510
.935								.0361
.974								.0255

1416 TB + GRIT

### EXTERNAL TANK SURFACE

(R2QT1B)

RW/L ( 2 ) = 4.580 HAW/HT( 3 ) = 1.000 MACH = 3.700 TO = 729.000 HD = 9574.800 ALPHA = .000

## SECTION 11: EXTERNAL TANK

DEPENDENT VARIABLE H/HREF

PHI .0000 48.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L

[illegible]





DATE 08 JUN 75

TABULATED DATA - IH18

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IH18 0898 + T8 + S5 SOLID ROCKET BOOSTER SURFACE

(RPQ501) ( 31 OCT 74 )

## REFERENCE DATA

SREF = 2890.0000 SQ.FT. XHRP = .6500 X/LB  
LREF = 474.8100 IN. YHRP = .0000 Y/84  
BREF = 936.6820 IN. ZHRP = .0000 Z  
SCALE = .0060

## PARAMETRIC DATA

MACH = 3.700 ALPHA = .000  
BETA = .000 DELTAH = .175

RN/L ( 1 ) = 1.930 HAH/HT ( 1 ) = .850 MACH = 3.700 TO = 719.000 HO = 3968.500 ALPHA = .000

SECTION ( 1 ) SOLID ROCKET BOOSTER DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L				
.000		-.8761	-.8761	
.004			3.4631	
.025			-2.1599	
.050		.0000	1.3144	
.100		.1718	.2753	
.112			.3452	
.150			.1434	
.200		.0725	.0905	.0621
.300			.0780	.0717
.400	.0384	.0000	.0263	.1235 .0531
.500			.1202	
.600		.1125	.1264	.0742 .0720
.650		.1063	.1367	
.700	.0900	.1129	.1135	.1433 .1174
.750		.2001	.2309	.3007
.800	.2281	.2994	.3535	.3762 .3350 .1763
.920	.1619	.2089	.2120	.1116 .0718 .0699
.950			.1749	.0790
1.000	.1681	.0000	.1855	.0939 .0662 .0000

RN/L ( 1 ) = 1.930 HAH/HT ( 2 ) = .900 MACH = 3.700 TO = 719.000 HO = 3968.500 ALPHA = .000

SECTION ( 1 ) SOLID ROCKET BOOSTER DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L				
.000		.6025	.6025	
.004			.3032	
.025			.3611	
.050		.0000	.2206	
.100		.0832	.1109	
.112			.1232	
.150			.0734	
.200		.0410	.0504	.0523 .0351
.300			.0437	.0402
.400	.0221	.0000	.0157	.0511 .0294
.500				.0667

IH16 0899 + T8 + S8 SOLID ROCKET BOOSTER SURFACE

(RQ0501)

RN/L ( 1 ) = 1.930 HAH/HT ( 2 ) = .900

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.600			.0612	.0675	.0413	.0400
.650			.0570	.0713		
.700	.0481	.0583	.0581	.0709	.0607	
.750		.0893	.0948	.1133		
.800	.0992	.1235	.1359	.1381	.1281	.0763
.920	.0767	.0951	.1022	.0618	.0415	.0393
.950			.0902		.0455	
1.000	.0819	.0000	.0955	.0535	.0380	.0000

RN/L ( 1 ) = 1.930 HAH/HT ( 3 ) = 1.000 MACH = 3.700 T8 = 719.000 H0 = 3968.500 ALPHA = .000

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.000			.1377		.1377	
.004					.1073	
.025					.1083	
.050			.0000		.0828	
.100			.0409		.0505	
.112					.0539	
.150					.0372	
.200			.0220	.0267	.0281	.0108
.300				.0232	.0214	
.400	.0119		.0000	.0087	.0304	.0155
.500					.0353	
.600			.0320	.0349	.0219	.0212
.650			.0296	.0365		
.700	.0233	.0297	.0294	.0353	.0309	
.750		.0423	.0435	.0505		
.800	.0468	.0568	.0609	.0609	.0573	.0358
.920	.0373	.0455	.0502	.0328	.0225	.0210
.950			.0458		.0246	
1.000	.0404	.0000	.0485	.0288	.0205	.0000





DATE 05 JUN 75

TABULATED DATA - 1418

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IH16 0898 + TB + SS SOLID ROCKET BOOSTER SURFACE

(RPQ501)

RN/L ( 2 ) = 4.570 HAH/HT ( 1 ) = .850 MACH = 3.700 TO = 724.000 HO = 9462.500 ALPHA = .000

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.000					
.004					
.025					
.050					
.100					
.112					
.150					
.200					
.300					
.400	.0428				
.500					
.600					
.650					
.700	.1459	.2172			
.750		.3794			
.800	.2453	.3585			
.920	.2143	.3172			
.950					
1.000	.2526	.0000			

RN/L ( 2 ) = 4.570 HAH/HT ( 2 ) = .800 MACH = 3.700 TO = 724.000 HO = 9462.500 ALPHA = .000

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.000					
.004					
.025					
.050					
.100					
.112					
.150					
.200					
.300					
.400	.0275				
.500					
.600					
.650					
.700	.0640	.0883			
.750		.1208			
.800	.0978	.1247			
.920	.0828	.1046			
.950					

IH16 089B + TB + SS SOLID ROCKET BOOSTER SURFACE

(RPOS01)

RN/L ( 2) = 4.570 HAH/HT ( 2) = .900

SECTION ( 1) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

1.000 .0936 .0000 .1036 .0585 .0418 .0000

RN/L ( 2) = 4.570 HAH/HT ( 3) = 1.000 MACH = 3.700 TO = 724.000 HO = 9462.500 ALPHA = .000

SECTION ( 1) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.000			.1154		.1154
.004					.0931
.025					.0929
.050			.0000		.0723
.100			.0377		.0473
.112					.0523
.150					.0362
.200			.0259	.0290	.0259 .0180
.300				.0194	.0136
.400	.0148		.0000	.0082	.0277 .0147
.500					.0370
.600			.0455	.0418	.0249 .0265
.650			.0409	.0441	
.700	.0302	.0404	.0405	.0424	.0358
.750		.0511	.0515	.0577	
.800	.0444	.0541	.0566	.0587	.0607 .0399
.920	.0370	.0447	.0493	.0332	.0251 .0228
.950			.0437		.0273
1.000	.0414	.0000	.0478	.0302	.0219 .0000





DATE 08 JUN 78

TABULATED DATA - IH16

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IH16 0898 + T8 + S6 SOLID ROCKET BOOSTER SURFACE

(RPOS02) ( 31 OCT 74 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2890.0000 SQ.FT. XMRP = .6500 X/LB  
LREF = 474.8100 IN. YMRP = .0000 Y/8H  
BREF = 938.8820 IN. ZMRP = .0000 Z  
SCALE = .0080

MACH = 3.700 ALPHA = -5.000  
BETA = .000 DELTAH = .175

RN/L ( 1 ) = 1.890 HAH/HT( 1 ) = .850 MACH = 3.700 TO = 708.000 HD = 3961.000 ALPHA = -5.000

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000			-.5319		-.5319
.004					-11.2483
.025					-.9276
.050			.0000		12.8863
.100			.3241		.3982
.112					.5043
.150					.1741
.200			.0890	.1476	.1034 .0420
.300				.0950	.0559
.400	.0451		.0000	.0403	.1153 .0386
.500					.1726
.600			.1231	.1309	.0854 .0714
.650			.1019	.1265	
.700	.0381	.0789	.1013	.1270	.1224
.750		.1186	.1920	.3296	
.800	.0781	.2001	.3947	.8142	.5690 .1890
.920	.0803	.1803	.2248	.1411	.0943 .0921
.950			.1783		.1026
1.000	.1191	.0000	.1911	.1180	.0930 .0000

RN/L ( 1 ) = 1.890 HAH/HT( 2 ) = .900 MACH = 3.700 TO = 708.000 HD = 3961.000 ALPHA = -5.000

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000			.8526		.8526
.004					.3270
.025					.4349
.050			.0000		.2499
.100			.1165		.1271
.112					.1371
.150					.0818
.200			.0538	.0723	.0568 .0246
.300				.0913	.0323
.400	.0290		.0000	.0227	.0599 .0225
.500					.0825

IH18 0898 + T8 + S8 SOLID ROCKET BOOSTER SURFACE

(RPQS02)

RN/L ( 1 ) = 1.890 HAW/HT ( 2 ) = .500

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.600			.0642	.0843	.0425	.0382
.650			.0540	.0630		
.700	.0216	.0436	.0519	.0607	.0591	
.750		.0604	.0918	.1103		
.800	.0409	.0918	.1345	.1603	.1563	.0788
.920	.0399	.0719	.0968	.0695	.0499	.0468
.950			.0834		.0537	
1.000	.0557	.0000	.0882	.0585	.0476	.0160

RN/L ( 1 ) = 1.890 HAW/HT ( 3 ) = 1.000 MACH = 3.700 TO = 708.000 H0 = 3961.000 ALPHA = -5.000

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.000			.1374		.1374	
.004					.1059	
.025					.1104	
.050			.0000		.0844	
.100			.0511		.0538	
.112					.0558	
.150					.0397	
.200			.0279	.0358	.0298	.0135
.300				.0267	.0175	
.400	.0140		.0000	.0121	.0306	.0122
.500					.0403	
.600			.0328	.0319	.0212	.0198
.650			.0278	.0314		
.700	.0118	.0230	.0263	.0297	.0290	
.750		.0305	.0381	.0473		
.800	.0210	.0441	.0580	.0647	.0638	.0357
.920	.0199	.0342	.0453	.0345	.0257	.0236
.950			.0404		.0275	
1.000	.0270	.0000	.0424	.0284	.0241	.0000





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TABULATED DATA - IH16

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IH16 089B + TB + SS SOLID ROCKET BOOSTER SURFACE

(RPQ502)

RN/L ( 2 ) = 4.560 HAW/HT ( 1 ) = .890 MACH = 3.700 TO = 725.000 HD = 9453.000 ALPHA = -5.000

SECTION ( 1 ) SOLID ROCKET BOSTR DEPENDENT VARIABLE H/HREF

PHI 99.0000135.0000180.0000225.0000270.0000315.0000

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X/L					
.000			-.4116	-.4116	
.004				-3.9250	
.025				-.6781	
.050			.0000	-6.9057	
.100			.3215	.3909	
.112				.5926	
.150				.1654	
.200			.1117	.1510	.0354
.300				.1109	.0485
.400	.0705		.0000	.0376	.0476
.500				.3135	
.600			.2005	.3016	.0906
.650			.1640	.2806	
.700	.0397	.0952	.1765	.2644	.1730
.750			.1364	.2777	.5857
.800	.0699	.1639	.3232	.4911	.4668
.920	.0721	.1545	.2330	.1239	.0887
.950			.1845		.1002
1.000	.1204	.0000	.2284	.1092	.0882

RN/L ( 2 ) = 4.560 HAW/HT ( 2 ) = .900 MACH = 3.700 TO = 725.000 HD = 9453.000 ALPHA = -5.000

SECTION ( 1 ) SOLID ROCKET BOSTR DEPENDENT VARIABLE H/HREF

PHI 99.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000			1.0093	1.0093	
.004				.2845	
.025				.4049	
.050			.0000	.2263	
.100			.1089	.1158	
.112				.1346	
.150				.0767	
.200			.0585	.0739	.0515
.300				.0577	.0289
.400	.0380		.0000	.0224	.0701
.500				.1159	
.600			.0878	.1053	.0601
.650			.0759	.1052	
.700	.0239	.0524	.0769	.1000	.0778
.750			.0702	.1035	.1415
.800	.0410	.0842	.1236	.1441	.1401
.920	.0396	.0723	.1000	.0647	.0494
.950			.0869		.0551

IH16 0898 + T8 + S8 SOLID ROCKET BOOSTER SURFACE

(RPQ502)

RN/L ( 2) = 4.560 HAH/HT( 2) = .800

SECTION ( 1) SOLID ROCKET BOSTR DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L						
1.000	.0593	.0000	.0984	.0583	.0485	.0000

RN/L ( 2) = 4.560 HAH/HT( 3) = 1.000 MACH = 3.700 TO = 725.000 HO = 9453.000 ALPHA = -5.000

SECTION ( 1) SOLID ROCKET BOSTR DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L						
.000			.1277		.1277	
.004					.0905	
.025					.0965	
.050			.0000		.0738	
.100			.0468		.0481	
.112					.0529	
.150					.0370	
.200			.0300	.0366	.0276	.0122
.300				.0294	.0160	
.400	.0198		.0000	.0124	.0340	.0146
.500					.0512	
.600			.0413	.0458	.0281	.0241
.650			.0366	.0469		
.700	.0132	.0278	.0374	.0446	.0371	
.750		.0356	.0459	.0562		
.800	.0224	.0427	.0553	.0597	.0584	.0328
.920	.0208	.0350	.0467	.0331	.0262	.0256
.950			.0422		.0290	
1.000	.0294	.0000	.0460	.0301	.0255	.0000





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TABULATED DATA - IH16

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IH16 SB

SOLID ROCKET BOOSTER SURFACE

(RPQ505) ( 31 OCT 74 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
LREF = 474.8100 IN. YMRP = .0000 Y/BW  
BREF = 936.6820 IN. ZMRP = .0000 Z  
SCALE = .0060

MACH = 3.700 ALPHA = .000  
BETA = .000

RN/L ( 1 ) = 1.930 HAW/HT ( 1 ) = .850 MACH = 3.700 TO = 722.000 HO = 3959.500 ALPHA = .000

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L  
.000 -1.6161  
.004 2.2266  
.025 -14.4040  
.050 .0000 1.0380  
.100 .1637 .1803  
.112 .1273  
.150 .0409  
.200 .0365 .0361 .0375 .0248  
.300 .0304 .0310  
.400 .0212 .0000 .0296 .0296 .0251  
.500 .0376  
.600 .0280 .0279 .0223 .0265  
.650 .0223 .0262  
.700 .0099 .0160 .0153 .0188 .0209  
.750 .0131 .0114 .0188  
.800 .0182 .0213 .0220 .0259 .0274 .0209  
.920 .0879 .0794 .0924 .0932 .1076 .1041  
.950 .3651 .2395  
1.000 10.1309 .0000 5.5542 1.7802 1.0797 .0000

RN/L ( 1 ) = 1.930 HAW/HT ( 2 ) = .900 MACH = 3.700 TO = 722.000 HO = 3959.500 ALPHA = .000

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L  
.000 .4750  
.004 .2944  
.025 .3264  
.050 .0000 .2108  
.100 .0802 .0864  
.112 .0695  
.150 .0252  
.200 .0226 .0224 .0232 .0153  
.300 .0186 .0189  
.400 .0126 .0000 .0178 .0177 .0148  
.500 .0217

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SOLID ROCKET BOOSTER SURFACE

(RQ505)

RN/L ( 1 ) = 1.930 HAH/HT ( 2 ) = .900

SECTION ( 1 ) SOLID ROCKET BOOSTER DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.600			.0155	.0154	.0122
.650			.0118	.0138	
.700	.0046	.0078	.0076	.0093	.0101
.750		.0059	.0051	.0086	
.800	.0088	.0086	.0090	.0107	.0111
.920	.0234	.0233	.0280	.0280	.0310
.950			.0729		.0551
1.000	.1110	.0000	.1351	.1153	.1053

RN/L ( 1 ) = 1.930 HAH/HT ( 3 ) = 1.000 HACH = 3.700 TO = 722.000 HO = 3959.500 ALPHA = .000

SECTION ( 1 ) SOLID ROCKET BOOSTER DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000			.1324		
.004				.1076	
.025				.1072	
.050			.0000	.0813	
.100			.0397	.0423	
.112				.0364	
.150				.0142	
.200			.0128	.0127	.0132
.300				.0105	.0106
.400	.0089		.0000	.0099	.0098
.500				.0117	
.600			.0082	.0081	.0064
.650			.0061	.0071	
.700	.0022	.0038	.0038	.0046	.0050
.750		.0028	.0024	.0041	
.800	.0030	.0039	.0041	.0049	.0051
.920	.0095	.0097	.0117	.0117	.0128
.950			.0280		.0217
1.000	.0373	.0000	.0458	.0402	.0375





DATE 08 JUN 75

TABULATED DATA - IH18

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IH18 SB

SOLID ROCKET BOOSTER SURFACE

(RPOS05)

RN/L ( 2 ) = 4.620 HAH/HT( 1 ) = .850 HACH = 3.700 TO = 725.000 HQ = 9573.800 ALPHA = .000

SECTION ( 1 ) SOLID ROCKET BOSTR

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.000					
.004					
.025					
.050					
.100					
.112					
.150					
.200					
.300					
.400	.0195				
.500					
.600					
.650					
.700	.0130	.0162			
.750		.0417			
.800	.0830	.0818			
.920	.3287	.3678			
.950		.7193			
1.000	.5099	.0000	.8163	.7026	.4546

RN/L ( 2 ) = 4.620 HAH/HT( 2 ) = .900 HACH = 3.700 TO = 725.000 HQ = 9573.800 ALPHA = .000

SECTION ( 1 ) SOLID ROCKET BOSTR

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.000					
.004					
.025					
.050					
.100					
.112					
.150					
.200					
.300					
.400	.0120				
.500					
.600					
.650					
.700	.0073	.0092			
.750		.0214			
.800	.0374	.0375			
.920	.1035	.1094			
.950		.1761			

IH18 56

SOLID ROCKET BOOSTER SURFACE

(RPOS05)

RN/L ( 2 ) = 4.620 HAW/HT( 2 ) = .900

SECTION ( 1 ) SOLID ROCKET BOOSTER DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L						
1.000	.1311	.0000	.1730	.1584	.1413	.0000

RN/L ( 2 ) = 4.620 HAW/HT( 3 ) = 1.000 MACH = 3.700 TO = 725.000 HO = 9573.800 ALPHA = .000

SECTION ( 1 ) SOLID ROCKET BOOSTER DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L						
.000		.1137				
.004				.0957		
.025				.0946		
.050		.0000		.0720		
.100		.0376		.0394		
.112				.0334		
.150				.0133		
.200		.0125	.0123	.0128	.0083	
.300			.0103	.0102		
.400	.0067	.0000	.0097	.0095	.0069	
.500				.0110		
.600		.0080	.0082	.0084	.0074	
.650		.0063	.0076			
.700	.0039	.0049	.0045	.0053	.0055	
.750		.0108	.0099	.0118		
.800	.0178	.0180	.0179	.0189	.0212	.0186
.920	.0438	.0455	.0549	.0551	.0602	.0537
.950			.0701		.0688	
1.000	.0528	.0000	.0672	.0621	.0594	.0000





DATE 06 JUN 75

TABULATED DATA - IH16

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IH16 S8

SOLID ROCKET BOOSTER SURFACE

(RPOS06) ( 31 OCT 74 )

## REFERENCE DATA

SREF = 2090.0000 SQ.FT. XMRP = .6500 X/LB  
LREF = 474.8100 IN. YMRP = .0000 Y/BH  
BREF = 935.6820 IN. ZMRP = .0000 Z  
SCALE = .0060

## PARAMETRIC DATA

MACH = 3.700 ALPHA = -5.000  
BETA = .000

RN/L ( 1 ) = 1.930 HAW/HT ( 1 ) = .850 MACH = 3.700 TO = 721.000 HO = 3957.600 ALPHA = -5.000

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L				
.000		-1.7108		
.004			1.4319	
.025			17.9526	
.050		.0000	.9226	
.100		.2352	.1828	
.112			.1258	
.150			.0406	
.200		.0588	.0524	.0414
.300			.0567	.0385
.400	.0365	.0000	.0625	.0428
.500			.0549	
.600		.0738	.0611	.0273
.650		.0705	.0663	
.700	.0297	.0663	.0708	.0599
.750		.1000	.0957	
.800	.0817	.1548	.1875	.1497
.920	.2164	.4147	.6856	.5731
.950		2.1558	.8112	
1.000	.6416	.0000	.9126	.6303

RN/L ( 1 ) = 1.930 HAW/HT ( 2 ) = .900 MACH = 3.700 TO = 721.000 HO = 3957.600 ALPHA = -5.000

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L				
.000		.4840		
.004			.2719	
.025			.3180	
.050		.0000	.2089	
.100		.1063	.0899	
.112			.0705	
.150			.0256	
.200		.0362	.0326	.0261
.300			.0345	.0238
.400	.0218	.0000	.0373	.0258
.500				.0322

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SOLID ROCKET BOOSTER SURFACE

(RPQS06)

RN/L ( 1 ) = 1.930 HAH/HT( 2 ) = .900

SECTION ( 1 ) SOLID ROCKET BOOSTER DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.600			.0418	.0345	.0157
.650			.0391	.0369	
.700	.0181	.0357	.0379	.0323	.0195
.750		.0480	.0540	.0461	
.800	.0394	.0692	.0788	.0662	.0481
.920	.0788	.1163	.1620	.1436	.1085
.950			.2556	.1713	
1.000	.1526	.0000	.2066	.1694	.1505

RN/L ( 1 ) = 1.930 HAH/HT( 3 ) = 1.000 MACH = 3.700 TO = 721.000 HO = 3957.600 ALPHA = -5.000

SECTION ( 1 ) SOLID ROCKET BOOSTER DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000			.1357		
.004				.1038	
.025				.1073	
.050			.0000	.0820	
.100			.0507	.0446	
.112				.0375	
.150				.0147	
.200			.0205	.0186	.0150
.300				.0193	.0135
.400	.0122		.0000	.0206	.0144
.500				.0176	.0062
.600			.0222	.0185	.0085
.650			.0207	.0195	.0071
.700	.0084	.0186	.0196	.0168	.0102
.750		.0243	.0261	.0227	
.800	.0194	.0329	.0365	.0313	.0234
.920	.0336	.0477	.0541	.0575	.0463
.950			.0925	.0665	.0360
1.000	.0605	.0000	.0811	.0688	.0625





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SOLID ROCKET BOOSTER SURFACE

(RPQ508)

RN/L (2) = 4.600 HAH/HT (1) = .850 MACH = 3.700 TO = 726.000 HO = 9545.300 ALPHA = -5.000

SECTION (1) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000					
.004					
.025					
.050					
.100					
.112					
.150					
.200					
.300					
.400	.0365				
.500					
.600					
.650					
.700	.0297	.0654			
.750		.2218			
.800	.1602	.4220	1.0095		
.920	.4106	.7632	1.1885	1.1775	
.950			1.3883		
1.000	.8397	.0000	3.1852	1.1397	

RN/L (2) = 4.600 HAH/HT (2) = .900 MACH = 3.700 TO = 726.000 HO = 9545.300 ALPHA = -5.000

SECTION (1) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000					
.004					
.025					
.050					
.100					
.112					
.150					
.200					
.300					
.400	.0218				
.500					
.600					
.650					
.700	.0183	.0345			
.750		.0788			
.800	.0650	.1162	.1513	.1149	
.920	.1240	.1596	.2035	.1849	
.950			.2298		

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IH18 S8

SOLID ROCKET BOOSTER SURFACE

(RPQS08)

RN/L ( 2 ) = 4.800 HAH/HT( 2 ) = .900

SECTION ( 1150.10 ROCKET BOOSTER DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

1.000 .1653 .0000 .2431 .1973 .1423 .0000

RN/L ( 2 ) = 4.600 HAH/HT( 3 ) = 1.000 MACH = 3.700 TO = 726.000 HO = 9545.300 ALPHA = -5.000

SECTION ( 1150.10 ROCKET BOOSTER DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.000			.1352		
.004				.0935	
.025				.1023	
.050			.0000	.0759	
.100			.0512	.0432	
.112				.0366	
.150				.0143	
.200			.0202	.0181	.0088
.300				.0189	.0133
.400	.0120		.0000	.0302	.0139
.500				.0170	.0084
.600			.0211	.0184	.0084
.650			.0202	.0193	
.700	.0088	.0178	.0189	.0184	.0113
.750		.0344	.0396	.0332	
.800	.0287	.0475	.0560	.0456	.0317
.920	.0517	.0618	.0766	.0730	.0470
.950			.0861	.0704	
1.000	.0634	.0000	.0654	.0744	.0615





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IH18 S6

SOLID ROCKET BOOSTER SURFACE

(RPQ507) ( 31 OCT 74 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
LREF = 474.8100 IN. YMRP = .0000 Y/BW  
BREF = 936.6820 IN. ZMRP = .0000 Z  
SCALE = .0060

HACH = 3.700 ALPHA = 20.000  
BETA = .000

RN/L ( 1 ) = 4.570 HAW/HT ( 1 ) = .850 MACH = 3.700 TO = 729.000 HO = 9545.900 ALPHA = 20.000

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000					
.004					
.025					
.050					
.100					
.112					
.150					
.200					
.300					
.400	.0431				
.500					
.600					
.650					
.700	.0671	.0733			
.750		.1354			
.800	.2779	.2138			
.920	.3094	.2740			
.950					
1.000	-10.8182	.0000			

RN/L ( 1 ) = 4.570 HAW/HT ( 2 ) = .900 MACH = 3.700 TO = 729.000 HO = 9545.900 ALPHA = 20.000

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000					
.004					
.025					
.050					
.100					
.112					
.150					
.200					
.300					
.400	.0257				
.500					

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IH18 S6

SOLID ROCKET BOOSTER SURFACE

(RPQ507)

RN/L ( 1 ) = 4.570 HAH/HT ( 2 ) = .900

SECTION ( 1 ) SOLID ROCKET BOSTR

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.600			.0376	.0665	.0750	.0764
.650			.0373	.0704		
.700	.0375	.0415	.0421	.0788	.1185	
.750		.0652	.0727	.2015		
.800	.1005	.0883	.1105	.2212	.8178	.2255
.920	.0974	.0960	.1500	.2743	.5396	.2974
.950			.1649		.6503	
1.000	.1657	.0000	.1505	.2815	.4596	.0000

RN/L ( 1 ) = 4.570 HAH/HT ( 3 ) = 1.000 HACH = 3.700 TO = 729.000 HO = 9545.800 ALPHA = 20.000

SECTION ( 1 ) SOLID ROCKET BOSTR

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.000			.1213			
.004					.3989	
.025					.1075	
.050			.0000		.0967	
.100			.0444		.0730	
.112					.0650	
.150					.0403	
.200			.0215	.0334	.0432	.0255
.300				.0319	.0406	
.400	.0142		.0040	.0358	.0425	.0288
.500					.0526	
.600			.0207	.0327	.0325	.0382
.650			.0204	.0348		
.700	.0199	.0222	.0224	.0371	.0500	
.750		.0320	.0350	.0667		
.800	.0441	.0406	.0493	.0738	.1031	.0695
.920	.0411	.0417	.0625	.0792	.0976	.0797
.950			.0663		.1016	
1.000	.0547	.0000	.0626	.0801	.0934	.0000





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TABULATED DATA - IH16

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IH16 SB

SOLID ROCKET BOOSTER SURFACE

(RPQ508) ( 31 OCT 74 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/BW  
 BREF = 936.6820 IN. ZMRP = .0000 Z  
 SCALE = .0080

MACH = 3.700 ALPHA = 45.000  
 BETA = .000

RN/L ( 1 ) = 4.540 HAH/HT( 1 ) = .250 MACH = 3.700 TO = 730.000 HO = 9499.400 ALPHA = 45.000

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000					
.004					
.025					
.050					
.100					
.112					
.150					
.200					
.300					
.400	.0452				
.500					
.600					
.650					
.700	.0535	.0803			
.750		.1837			
.800	.2737	.3248			
.920	.1353	.1333			
.950					
1.000	-.2233	.0000	2.0338	-.2611	.0000

RN/L ( 1 ) = 4.540 HAH/HT( 2 ) = .900 MACH = 3.700 TO = 730.000 HO = 9499.400 ALPHA = 45.000

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000					
.004					
.025					
.050					
.100					
.112					
.150					
.200					
.300					
.400	.0235	.0000	.2223	.5083	.1875
.500					

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TABULATED DATA - IH16

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IH16 S6

SOLID ROCKET BOOSTER SURFACE

(RPQS08)

RN/L ( 1 ) = 4.540 HAW/HT ( 2 ) = .900

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.600			.0689	.1835	.4720	.2438
.650			.0639	.1853		
.700	.0290	.0433	.0709	.2121	.6096	
.750		.0839	.1027	.5260		
.800	.0841	.1045	.1631	1.0435	-.2412	-21.2389
.920	.0538	.0580	.1391	-5.3281	-.2620	-1.0499
.950			.1855		-.2564	
1.000	.3716	.0000	.1826	1.1831	-.7214	.0000

RN/L ( 1 ) = 4.540 HAW/HT ( 3 ) = 1.000 MACH = 3.700 TO = 730.000 HO = 9498.400 ALPHA = 45.000

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.000			.1257			
.004					.1102	
.025					.1154	
.050			.0000		.1158	
.100			.0556		.1190	
.112					.1108	
.150					.0939	
.200			.0417	.0745	.1085	.0602
.300				.0693	.0982	
.400	.0120		.0000	.0714	.0876	.0576
.500					.0998	
.600			.0341	.0608	.0618	.0672
.650			.0320	.0640		
.700	.0151	.0228	.0348	.0669	.0909	
.750		.0393	.0470	.0897		
.800	.0353	.0443	.0830	.0949	.1287	.0876
.920	.0244	.0272	.0561	.1042	.1407	.1061
.950			.0672		.1531	
1.000	.0587	.0000	.0647	.0981	.1185	.0000



DATE 08 JUN 75

TABULATED DATA - IN16

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**SOLID ROCKET BOOSTER SURFACE**

(RPQS09) ( 31 OCT 74 )

### REFERENCE DATA

```

SREF = 2890.0000 SQ.FT.  XMRP = .6500 X/LB
LREF = 474.8100 IN.      YMRP = .0000 Y/BW
BREF = 938.6820 IN.      ZMRP = .0000 Z
SCALE = .0080

```

### PARAMETRIC DATA

MACH	"	3.700	ALPHA	"	70.000
BETA	"	.000			

RN/L (1) = 4.560 HAW/HT(1) = .650 MACH = 3.700 TO = 728.000 HD = 6517.400 ALPHA = 70.000

## SECTION (1) SOLID ROCKET BOOSTER

## DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.000				- .2442		
.004					- .2797	
.025					- .1035	
.050				.0000	- .0735	
.100				- .9098	- .0841	
.112					- .0990	
.150					- .0891	
.200				1.9042	- .2132	- .1207
.300					- .2381	- .1230
.400	.0470			.0000	- .2179	- .1622
.500					- .1062	
.600				.3818	- .1986	- .1510
.650				.3060	- .2428	
.700	.0521	.0975		.3920	- .2019	- .1162
.750		.1395		.3499	- .2016	
.800	.1556	.2040	1.0990	- .1674	- .0740	- .1154
.920	.0809	.0974	.4194	- .2031	- .1202	- .1664
.950			.4843		- .1250	
1.000	.1252	.0000	.3442	- .2677	- .1351	.0000

RN/L ( 1 ) = 4.560 HAW/HT( 2 ) = .900 MACH = 3.700 TO = 728.000 HD = 9517.400 ALPHA = 70.000

## SECTION (1) SOLID ROCKET BOOSTER

## DEPENDENT VARIABLE H/HREF

PHI 80.0000135.0000180.0000225.0000270.0000315.0000

X/L

.000		2.8228			
.004				.9325	
.028				-.3332	
.050		.0000		-.1721	
.100		.1941		-.1777	
.112				-.2192	
.150				-.1994	
.200		.1627	4.3521	-.3160	-.6770
.300			1.4286	-.3246	
.400	.0243	.0000	11.1109	-.3022	-8.5975
.500				-.2330	

IH16 SS

SOLID ROCKET BOOSTER SURFACE

(RPOS09)

RN/L ( 1 ) = 4.580 MAH/HT( 2 ) = .800

SECTION ( 1 ) SOLID ROCKET BOSTR

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.600			.1166	3.0879	-.1642	-.9142
.650			.1031	1.2059		
.700	.0283	.0499	.1133	10.2976	-.2896	
.750		.0650	.1096	-7.5404		
.800	.0645	.0825	.1599	-1.6183	-.1408	-.4543
.920	.0399	.0462	.1153	2.8774	-.3295	-1.4023
.950			.1238		-.3014	
1.000	.0526	.0000	.1064	.6783	-.3886	.0000

RN/L ( 1 ) = 4.580 MAH/HT( 3 ) = 1.000 MACH = 3.700 TO = 728.000 HO = 9517.400 ALPHA = 70.000

SECTION ( 1 ) SOLID ROCKET BOSTR

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.000			.1071			
.004					.0965	
.025					.0969	
.050			.0000		.1021	
.100			.0566		.1449	
.112					.1536	
.150					.1351	
.200			.0575	.0993	.1654	.0824
.300				.0952	.1424	
.400	.0123		.0000	.1058	.1431	.0835
.500					.1680	
.600			.0488	.0906	.1038	.1003
.650			.0443	.0932		
.700	.0148	.0253	.0468	.0981	.1460	
.750		.0315	.0462	.1050		
.800	.0297	.0376	.0590	.0991	.1745	.0933
.920	.0198	.0225	.0471	.0918	.1327	.1012
.950			.0497		.1655	
1.000	.0244	.0000	.0447	.0841	.1412	.0000





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TABULATED DATA - IH16

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IH16 S6

SOLID ROCKET BOOSTER SURFACE

(RPQS10) ( 31 OCT 74 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
LREF = 474.8100 IN. YMRP = .0000 Y/6H  
BREF = 936.6820 IN. ZMRP = .0000 Z  
SCALE = .0060

MACH = 3.700 ALPHA = 90.000  
BETA = .000

RN/L ( 1 ) = 4.540 HAW/HT( 1 ) = .850 MACH = 3.700 TO = 731.000 HO = 9526.900 ALPHA = 90.000

SECTION ( 1 ) SOLID ROCKET BOSTR

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.000					
.004					
.025					
.050		.0000			
.100		-2.5607			
.112					
.150					
.200		12.3428	-.2020	-.1228	-.1148
.300			-.2107	-.1165	
.400	.0547	.0000	-.1917	-.1107	-.1441
.500				-.0998	
.600		.6337	-.1760	-.0673	-.1352
.650		.4623	-.2079		
.700	.0620	.1128	.7161	-.1752	-.1069
.750		.1684	.5362	-.1769	
.800	.2121	.2356	1.3132	-.2106	-.1179
.920	.0817	.1290	.6343	-.2257	-.1454
.950			4.5162	-.1507	
1.000	.1348	.0000	-.4016	-.1147	-.1041

RN/L ( 1 ) = 4.540 HAW/HT( 2 ) = .900 MACH = 3.700 TO = 731.000 HO = 9526.900 ALPHA = 90.000

SECTION ( 1 ) SOLID ROCKET BOSTR

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.000					
.004					
.025					
.050		.0000			
.100		.1680			
.112					
.150					
.200		.1030	-4.3027	-.2759	-.4531
.300			-8.7670	-.2589	
.400	.0260	.0000	-1.1785	-.2356	-.7640
.500				-.1929	

IH16 SB

SOLID ROCKET BOOSTER SURFACE

(RPOS10)

RN/L ( 1 ) = 4.540 HAH/HT( 2 ) = .900

SECTION ( 1 ) SOLID ROCKET BOOSTER DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.600			.1367	-1.5446	-.1345
.650			.1216	-5.2745	
.700	.0307	.0531	.1370	-1.0403	-.2226
.750		.0708	.1253	-1.0389	
.800	.0711	.0845	.1622	-4.4869	-.2539
.850	.0375	.0536	.1303	1.9450	-.4266
.900			.1837		-.4262
1.000	.0559	.0000	.3435	-.3464	-.2200

RN/L ( 1 ) = 4.540 HAH/HT( 3 ) = 1.000 MACH = 3.700 TO = 731.000 HO = 9526.900 ALPHA = 90.000

SECTION ( 1 ) SOLID ROCKET BOOSTER DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000			.0946		
.004				.0834	
.025				.0835	
.050			.0000	.0882	
.100			.0536	.1327	
.112				.1559	
.150				.1612	
.200			.0616	.1088	.0928
.300				.1093	.1792
.400	.0127		.0000	.1268	.1875
.500				.2231	
.600			.0532	.1061	.1349
.650			.0492	.1105	.1254
.700	.0153	.0238	.0524	.1172	.1914
.750		.0328	.0495	.1188	
.800	.0305	.0370	.0589	.1133	.1944
.850	.0180	.0247	.0503	.0961	.1488
.900			.0630		.1605
1.000	.0258	.0000	.0729	.1140	.1791





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TABULATED DATA - IH18

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IH18 0898 + TB + S6 SOLID ROCKET BOOSTER SURFACE

(RPOS13) ( 31 OCT 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
LREF = 474.8106 IN. YMRP = .0000 Y/6H  
BREF = 936.6820 IN. ZMRP = .0000 Z  
SCALE = .0060

## PARAMETRIC DATA

MACH = 3.700 ALPHA = .000  
BETA = .000 DELTA = .069

RN/L ( 1 ) = 1.990 HAN/HT ( 1 ) = .850 MACH = 3.700 TO = 723.000 HO = 4087.200 ALPHA = .000

## SECTION ( 1 ) SOLID ROCKET BOOSTER

## DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000			-.8282		-.8282
.004					3.8435
.025					-2.1366
.050			.0000		1.4105
.100			.1672		.2908
.112					.3545
.150					.1627
.200			.0684	.0895	.0937 .0654
.300				.0737	.0695
.400	.0363		.0000	.1408	.1185 .0516
.500					.1218
.600			.1121	.1107	.0651 .0693
.650			.1002	.1168	
.700	.0912	.1093	.0997	.1137	.0980
.750		.1934	.2121	.2439	
.800	.2650	.3259	.3846	.4009	.4017 .2039
.920	.1702	.2083	.2165	.1354	.0861 .0860
.950			.2303		.1075
1.000	.1662	.0000	.1869	.1234	.0963 .0000

RN/L ( 1 ) = 1.990 HAN/HT ( 2 ) = .900 MACH = 3.700 TO = 723.000 HO = 4087.200 ALPHA = .000

## SECTION ( 1 ) SOLID ROCKET BOOSTER

## DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000			.5697		.5697
.004					.3081
.025					.3630
.050			.0000		.2219
.100			.0802		.1138
.112					.1236
.150					.0789
.200			.0386	.0492	.0525 .0363
.300				.0417	.0393
.400	.0211		.0000	.0723	.0626 .0293
.500					.0679

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TABULATED DATA - IH16

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IH16 0899 + T8 + S8 SOLID ROCKET BOOSTER SURFACE

(RPQS13)

RN/L ( 1 ) = 1.990 HAW/HT( 2 ) = .900

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.500			.0604	.0601	.0378	.0387
.650			.0536	.0623		
.700	.0457	.0557	.0512	.0581	.0515	
.750		.0838	.0854	.0952		
.800	.1056	.1238	.1336	.1340	.1323	.0788
.920	.0767	.0910	.0990	.0682	.0505	.0444
.950			.1128		.0558	
1.000	.0785	.0000	.0919	.0629	.0491	.0000

RN/L ( 1 ) = 1.990 HAW/HT( 3 ) = 1.000 MACH = 3.700 T8 = 723.000 H0 = 4087.200 ALPHA = .000

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.000			.1348		.1348	
.004					.1065	
.025					.1087	
.050			.0000		.0826	
.100			.0393		.0513	
.112					.0537	
.150					.0389	
.200			.0206	.0259	.0279	.0182
.300				.0223	.0210	
.400	.0115		.0000	.0367	.0322	.0158
.500					.0360	
.600			.0314	.0314	.0202	.0205
.650			.0278	.0322		
.700	.0228	.0281	.0260	.0294	.0264	
.750		.0392	.0389	.0429		
.800	.0478	.0553	.0580	.0575	.0565	.0360
.920	.0365	.0428	.0475	.0342	.0259	.0226
.950			.0537		.0285	
1.000	.0382	.0000	.0455	.0317	.0248	.0000





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TABULATED DATA - IH18

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IH18 0898 + T8 + S8 SOLID ROCKET BOOSTER SURFACE

(RP0513)

RN/L ( 2 ) = 4.550 HAW/HT( 1 ) = .850 MACH = 3.700 TO = 728.000 HD = 9498.400 ALPHA = .000

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000					
.004					
.025					
.050					
.100					
.112					
.150					
.200					
.300					
.400	.0459				
.500					
.600					
.650					
.700	.1439	.1914			
.750		.3173			
.800	.2580	.3431			
.920	.2119	.2716			
.950					
1.000	.2462	.0000	.2404	.1539	.1164

RN/L ( 2 ) = 4.550 HAW/HT( 2 ) = .800 MACH = 3.700 TO = 728.000 HD = 9498.400 ALPHA = .000

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000					
.004					
.025					
.050					
.100					
.112					
.150					
.200					
.300					
.400	.0258				
.500					
.600					
.650					
.700	.0671	.0857			
.750		.1181			
.800	.1050	.1282			
.920	.0881	.1052			
.950					

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TABULATED DATA - IH16

PAGE 128

IH16 099B + T8 + S8 SOLID ROCKET BOOSTER SURFACE

(RPQS13)

RN/L ( 2 ) = 4.550 HAW/HT( 2 ) = .900

SECTION ( 1 ) SOLID ROCKET BOOSTER DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L  
1.000 .0978 .0000 .1054 .0756 .0590 .0000

RN/L ( 2 ) = 4.550 HAW/HT( 3 ) = 1.000 MACH = 3.700 TO = 728.000 HD = 9499.400 ALPHA = .000

SECTION ( 1 ) SOLID ROCKET BOOSTER DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000			.1336		.1336
.004					.0982
.025					.1042
.050			.0000		.0783
.100			.0395		.0499
.112					.0600
.150					.0444
.200			.0281	.0299	.0278 .0190
.300				.0215	.0178
.400	.0147		.0000	.0394	.0332 .0177
.500					.0418
.600			.0410	.0404	.0253 .0259
.650			.0375	.0416	
.700	.0325	.0407	.0359	.0386	.0342
.750		.0512	.0490	.0532	
.800	.0487	.0569	.0580	.0582	.0654 .0428
.920	.0408	.0473	.0520	.0398	.0318 .0271
.950			.0581		.0330
1.000	.0444	.0000	.0503	.0374	.0297 .0000





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TABULATED DATA - IH16

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IH16 089B + TB + S6 SOLID ROCKET BOOSTER SURFACE

(RPOS14) ( 31 OCT 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
LREF = 474.8100 IN. YMRP = .0000 Y/BW  
BREF = 938.6820 IN. ZMRP = .0000 Z  
SCALE = .0060

## PARAMETRIC DATA

MACH = 3.700 ALPHA = -5.000  
BETA = .000 DELTAH = .069

RN/L ( 1 ) = 2.000 HAH/HT ( 1 ) = .950 MACH = 3.700 TO = 720.000 HO = 4102.800 ALPHA = -5.000

SECTION ( 1 ) SOLID ROCKET BOSTR

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L  
.000 -.4579 -.4579  
.004 -.20175  
.025 -.6325  
.050 .0000 -1.9442  
.100 .3987 .5495  
.112 .6924  
.150 .2101  
.200 .0992 .1446 .1181 .0502  
.300 .1109 .0696  
.400 .0478 .0000 .2292 .1377 .0512  
.500 .1838  
.600 .1200 .1305 .0924 .0755  
.650 .0984 .1237  
.700 .0390 .0769 .0945 .1208 .1222  
.750 .1235 .1967 .3142  
.800 .0828 .1889 .3549 .5405 .5049 .2118  
.920 .0718 .1233 .1687 .1302 .1076 .0952  
.950 .1972 .1268  
1.000 .1010 .0000 .1563 .1201 .1320 .0000

RN/L ( 1 ) = 2.000 HAH/HT ( 2 ) = .900 MACH = 3.700 TO = 720.000 HO = 4102.800 ALPHA = -5.000

SECTION ( 1 ) SOLID ROCKET BOSTR

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L  
.000 .7632 .7632  
.004 .3254  
.025 .4168  
.050 .0000 .2568  
.100 .1173 .1304  
.112 .1360  
.150 .0832  
.200 .0519 .0568 .0806 .0281  
.300 .0558 .0382  
.400 .0274 .0000 .0967 .0664 .0287  
.500 .0818

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IH16 089B + TB + S8 SOLID ROCKET BOOSTER SURFACE

(RQ514)

RN/L ( 1 ) = 2.000 HAW/HT ( 2 ) = .900

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.600			.0814	.0618	.0432	.0367
.630			.0514	.0598		
.700	.0223	.0425	.0484	.0572	.0577	
.750		.0633	.0845	.1089		
.800	.0438	.0873	.1259	.1488	.1435	.0810
.820	.0359	.0581	.0776	.0638	.0545	.0475
.950			.0870		.0615	
1.000	.0484	.0000	.0744	.0586	.0601	.0000

RN/L ( 1 ) = 2.000 HAW/HT ( 3 ) = 1.000 MACH = 3.700 TO = 720.000 HO = 4102.800 ALPHA = -5.000

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.000			.1205		.1205	
.004					.0979	
.025					.0865	
.050			.0000		.0787	
.100			.0486		.0516	
.112					.0522	
.150					.0377	
.200			.0265	.0322	.0307	.0150
.300				.0280	.0201	
.400	.0148		.0000	.0449	.0326	.0153
.500					.0388	
.600			.0311	.0301	.0210	.0196
.650			.0263	.0294		
.700	.0120	.0225	.0245	.0279	.0281	
.750		.0320	.0395	.0472		
.800	.0224	.0420	.0550	.0612	.0590	.0362
.920	.0180	.0283	.0373	.0316	.0274	.0237
.950			.0411		.0303	
1.000	.0237	.0000	.0363	.0290	.0288	.0000





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TABULATED DATA - IH16

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IH16 099B + T8 + S6 SOLID ROCKET BOOSTER SURFACE

(RPOS14)

RN/L ( 2 ) = 4.470 HAH/HT( 1 ) = .850 MACH = 3.700 TO = 723.000 HO = 9261.100 ALPHA = -5.000

SECTION ( 1 ) SOLID ROCKET BOSTR

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L				
.000			-.3389	-.3389
.004				-1.3191
.025				-.4584
.050			.0000	-1.1857
.100			.4073	.5359
.112				.9818
.150				.2637
.200			.1023	.1557
.300				.1236
.400	.0608		.0000	.2907
.500				.1497
.600				.0533
.650			.2028	.2887
.700	.0413	.0664	.3164	.1425
.750		.1488	.1719	.0957
.800	.0807	.1646	.2515	.2878
.820	.0777	.1437	.1688	.8209
.850			.4224	.6919
.900			.2078	.8691
.950			.2454	.1370
1.000	.1284	.0000	.1786	.1712
			.1404	.2009
				.0000

RN/L ( 2 ) = 4.470 HAH/HT( 2 ) = .800 MACH = 3.700 TO = 723.000 HO = 9261.100 ALPHA = -5.000

SECTION ( 1 ) SOLID ROCKET BOSTR

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L				
.000			1.2319	1.2319
.004				.3198
.025				.4995
.050			.0000	.2577
.100			.1163	.1283
.112				.1475
.150				.0967
.200			.0539	.0734
.300				.0570
.400	.0337		.0000	.0329
.500				.1083
.600				.0681
.650			.0853	.1040
.700	.0242	.0517	.1018	.0579
.750		.0758	.1030	.0478
.800	.0456	.0733	.0743	.0936
.820	.0400	.0928	.1104	.0791
.850			.1480	
.900			.1354	.1551
.950			.0889	.1647
			.0683	.0839
			.1011	.0644
				.0579
				.0758

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TABULATED DATA - IH18

PAGE 132

IH18 0858 + TS + 88 SOLID ROCKET BOOSTER SURFACE

(RPQ814)

RN/L ( 2 ) = 4.470 MAH/HT( 2 ) = .800

SECTION ( 1 ) SOLID ROCKET BOOSTER DEPENDENT VARIABLE H/HREF

PHI 80.0000135.0000180.0000225.0000270.0000315.0000

X/L						
1.000	.0586	.0000	.0821	.0669	.0801	.0000

RN/L ( 2 ) =	4.470	MAH/HT( 3 ) =	1.000	MACH =	3.700	TO =	723.000	H0 =	9261.100	ALPHA =	-5.000
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SECTION ( 1 ) SOLID ROCKET BOOSTER DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L						
.000			.1200		.1200	
.004					.0917	
.025					.0964	
.050			.0000		.0750	
.100			.0479		.0500	
.112					.0548	
.150					.0427	
.200			.0277	.0357	.0297	.0136
.300				.0305	.0179	
.400	.0178		.0000	.0469	.0326	.0158
.500					.0456	
.600			.0395	.0432	.0265	.0239
.650			.0358	.0451		
.700	.0132	.0268	.0351	.0415	.0367	
.750		.0363	.0473	.0561		
.800	.0244	.0453	.0574	.0608	.0628	.0378
.920	.0203	.0314	.0415	.0333	.0313	.0284
.950			.0465		.0359	
1.000	.0288	.0000	.0395	.0326	.0363	.0000





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TABULATED DATA - IH16

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IH16 0098+T8+S8+GRIT SR8

(RPQ515) ( 31 OCT 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
LREF = 474.8100 IN. YMRP = .0000 Y/BH  
BREF = 936.6820 IN. ZMRP = .0000 Z  
SCALE = .0080

## PARAMETRIC DATA

MACH = 3.700 ALPHA = .000  
BETA = .000 DELTAH = .175  
GRITNO = 25.000

RN/L ( 1 ) = 1.890 HAH/HT ( 1 ) = .850 MACH = 3.700 TO = 725.000 HO = 3909.300 ALPHA = .000

## SECTION ( 1 ) SOLID ROCKET BOOSTER

## DEPENDENT VARIABLE H/HREF

PHI 80.0000135.0000180.0000225.0000270.0000315.0000

X/L				
.000				
.004				
.025				
.050				
.100				
.112				
.150				
.200				
.300				
.400	.0768			
.500				
.600				
.650				
.700	.0766	.0842		
.750		.1137		
.800	.1588	.1880		
.920	.1971	.2875		
.950		.3256		
1.000	.1928	.0000	.2378	.1443

RN/L ( 1 ) = 1.890 HAH/HT ( 2 ) = .900 MACH = 3.700 TO = 725.000 HO = 3909.300 ALPHA = .000

## SECTION ( 1 ) SOLID ROCKET BOOSTER

## DEPENDENT VARIABLE H/HREF

PHI 80.0000135.0000180.0000225.0000270.0000315.0000

X/L				
.000				
.004				
.025				
.050				
.100				
.112				
.150				
.200				
.300				
.400	.0413			
.500				

IH18 089B+T8+SB+CRIT SR9

(RPQS15)

RN/L ( 1 ) = 1.890 HAW/HT( 2 ) = .900

SECTION ( 1 ) SOLID ROCKET BOOSTER DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.600			.0577	.0600	.0402	.0431
.650			.0489	.0609		
.700	.0401	.0454	.0449	.0584	.0554	
.750		.0546	.0670	.1032		
.800	.0712	.0817	.1119	.1442	.1608	.0951
.920	.0851	.1138	.1248	.0655	.0599	.0483
.950			.1365		.0628	
1.000	.0877	.0000	.1105	.0722	.0537	.0000

RN/L ( 1 ) = 1.890 HAW/HT( 3 ) = 1.000 MACH = 3.700 TO = 725.000 HD = 3909.380 ALPHA = .000

SECTION ( 1 ) SOLID ROCKET BOOSTER DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.000			.1344		.1344	
.004					.1111	
.025					.1085	
.050			.0000		.0847	
.100			.0514		.0577	
.112					.0613	
.150					.0408	
.200			.0276	.0294	.0299	.0196
.300				.0216	.0180	
.400	.0214		.0000	.0359	.0327	.0166
.500					.0375	
.600			.0303	.0311	.0214	.0228
.650			.0258	.0313		
.700	.0205	.0236	.0232	.0292	.0285	
.750		.0267	.0314	.0453		
.800	.0338	.0383	.0496	.0602	.0650	.0417
.920	.0398	.0515	.0578	.0421	.0305	.0244
.950			.0631		.0319	
1.000	.0420	.0000	.0534	.0361	.0269	.0000





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TABULATED DATA - IH16

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IH16 089B+T8+S6+GRIT SRB

(RPQS15)

RN/L ( 2 ) = 4.620 HAH/HT( 1 ) = .850 MACH = 3.700 TO = 723.000 HO = 9494.500 ALPHA = .000

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000			-.3991		-.3991
.004					-1.1954
.025					-.5220
.050			.0000		-1.5171
.100			2.1774		-2.7493
.112					-.8489
.150					.3170
.200			.1297	.1129	.1011 .0638
.300				.0700	.0398
.400	.1359		.0000	.1698	.1392 .0700
.500					.2594
.600			.3237	.4164	.1602 .1258
.650			.2503	.3508	
.700	.1202	.2004	.2327	.3120	.2071
.750			.3393	.5029	1.1199
.800	.2142	.3192	.4107	.6313	1.5537 .3918
.920	.2289	.3168	.3957	.2393	.1688 .1462
.950			.4968		.1723
1.000	.2721	.0000	.4009	.1965	.2560 .0000

RN/L ( 2 ) = 4.620 HAH/HT( 2 ) = .900 MACH = 3.700 TO = 723.000 HO = 9494.500 ALPHA = .000

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000			1.7182		1.7182
.004					.3703
.025					.5688
.050			.0000		.2752
.100			.1745		.2175
.112					.3545
.150					.1159
.200			.0654	.0605	.0559 .0355
.300				.0394	.0237
.400	.0612		.0000	.0743	.0655 .0362
.500					.1046
.600			.1147	.1212	.0638 .0582
.650			.0974	.1177	
.700	.0574	.0868	.0918	.1069	.0844
.750		.1187	.1319	.1651	
.800	.0930	.1213	.1337	.1539	.1937 .1124
.920	.0910	.1134	.1365	.0977	.0748 .0649
.950			.1579		.0756

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TABULATED DATA - IH16

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IH16 0898+T8+S6+CRIT SRB

(RPQS15)

RN/L ( 2 ) = 4.620 HAW/HT( 2 ) = .900

SECTION ( 1 ) SOLID ROCKET BOOSTER DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

1.000 .1045 .0000 .1379 .0864 .0880 .0000

RN/L ( 2 ) = 4.620 HAW/HT( 3 ) = 1.000 MACH = 3.700 TO = 723.000 HO = 9494.500 ALPHA = .000

SECTION ( 1 ) SOLID ROCKET BOOSTER DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.000			.1477		.1477
.004					.1023
.025					.1098
.050			.0000		.0818
.100			.0615		.0689
.112					.0924
.150					.0511
.200			.0336	.0314	.0295 .0188
.300				.0210	.0131
.400	.0292		.0000	.0350	.0318 .0184
.500					.0477
.600			.0501	.0502	.0290 .0281
.650			.0439	.0505	
.700	.0281	.0407	.0415	.0462	.0386
.750		.0516	.0533	.0610	
.800	.0436	.0541	.0569	.0512	.0704 .0464
.920	.0413	.0496	.0591	.0448	.0354 .0307
.950			.0669		.0356
1.000	.0468	.0000	.0595	.0407	.0381 .0000





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(RPOS17) ( 31 OCT 74 )

### PARAMETRIC DATA

MACH	=	3.700	ALPHA	=	.000
BETA	=	.000	GRITNO	=	25.000

SECTION ( 1 ) SOLID ROCKET BOOSTER DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000			-1.2206		
.004				1.5658	
.025				-16.8190	
.050			.0000	1.2097	
.100			.3030	.3327	
.112				.2595	
.150				.0781	
.200			.0687	.0745	.0485
.300				.0830	.0751
.400	.0670		.0000	.1024	.0845
.500					.1173
.600			.1081	.1013	.0783
.650			.0974	.1083	
.700	.0268	.1120	.0989	.1072	.1275
.750		.1899	.1891	.1773	
.800	.1943	.2207	.2150	.2122	.2888
.920	.1073	.1114	.1335	.1387	.1575
.950			.1745		.1794
1.000	.1212	.0000	.1540	.1319	.1418
					.0000

RN/L (1) = 1.930 HAW/HT(2) = .900 MACH = 3.700 TO = 734.000 HO = 4051.600 ALPHA = .000

SECTION (1) SOLID ROCKET BOOSTER DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000		.4857			
.004				.2688	
.025				.3128	
.050		.0000		.2143	
.100		.1142		.1229	
.112				.1102	
.150				.0432	
.200		.0388	.0420	.0442	.0273
.300			.0450	.0413	
.400	.0359	.0000	.0539	.0454	.0224
.500				.0609	

DATE 05 JUN 75

TABULATED DATA - IH16

PAGE 138

IH16 S6 + GRIT

SOLID ROCKET BOOSTER SURFACE

(RPOS17)

RN/L (1) = 1.930 HAH/HT(2) = .900

SECTION (1) SOLID ROCKET BOSTR

DEPENDENT VARIABLE W/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.600			.0566	.0529	.0400
.650			.0517	.0570	
.700	.0462	.0588	.0516	.0556	.0642
.750		.0825	.0779	.0813	
.800	.0924	.1035	.0968	.0990	.1166
.850	.0981	.0609	.0729	.0732	.0836
.900			.0933		.0946
.950	.0682	.0000	.0851	.0747	.0789
1.000					.0000

RN/L (1) = 1.930 HAH/HT(3) = 1.000 MACH = 3.700 TO = 734.000 HO = 4051.600 ALPHA = .000

SECTION (1) SOLID ROCKET BOSTR

DEPENDENT VARIABLE W/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000			.1300		
.004				.1011	
.025				.1031	
.050			.0000	.0810	
.100			.0509	.0544	
.112				.0513	
.150				.0228	
.200			.0207	.0224	.0235
.300				.0235	.0217
.400	.0186		.0000	.0277	.0236
.500				.0310	.0150
.600			.0290	.0270	.0202
.650			.0267	.0292	.0239
.700	.0238	.0302	.0264	.0284	.0322
.750		.0406	.0374	.0391	
.800	.0451	.0502	.0475	.0475	.0546
.850	.0303	.0320	.0382	.0381	.0431
.900			.0483		.0487
.950	.0384	.0000	.0457	.0400	.0418
1.000					.0000





DATE 06 JUN 75

TABULATED DATA - IH18

PAGE 139

IH18 S6 + GRIT

SOLID ROCKET BOOSTER SURFACE

(RPOS17)

RN/L ( 2 ) = 4.540 HAH/HT( 1 ) = .850 MACH = 3.700 TO = 732.000 HO = 9527.900 ALPHA = .000

SECTION ( 1 ) SOLID ROCKET BOSTR

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000					
.004					
.025					
.050					
.100					
.112					
.150					
.200					
.300					
.400	.1223				
.500					
.600					
.650					
.700	.1035	.1316			
.750		.2111			
.800	.1960	.2357			
.920	.1203	.1267			
.950					
1.000	.1290	.0000			

RN/L ( 2 ) = 4.540 HAH/HT( 2 ) = .900 MACH = 3.700 TO = 732.000 HO = 9527.900 ALPHA = .000

SECTION ( 1 ) SOLID ROCKET BOSTR

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000					
.004					
.025					
.050					
.100					
.112					
.150					
.200					
.300					
.400	.0552				
.500					
.600					
.650					
.700	.0522	.0648			
.750		.0896			
.800	.0875	.1001			
.920	.0597	.0628			
.950					

DATE 06 JUN 75

TABULATED DATA - IH16

PAGE 140

IH16 S6 + GRIT

SOLID ROCKET BOOSTER SURFACE

(RFGS17)

RN/L ( 2 ) = 4.540 HAH/HT( 2 ) = .900

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

1.000 .0670 .0000 .0855 .0737 .0778 .0000

RN/L ( 2 ) = 4.540 HAH/HT( 3 ) = 1.000 MACH = 3.700 TO = 732.000 HO = 9527.900 ALPHA = .000

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.000			.1114			
.004					.0871	
.025					.0878	
.050			.0000		.0693	
.100			.0512		.0541	
.112					.0534	
.150					.0258	
.200			.0254	.0266	.0266	.0169
.300				.0305	.0302	
.400	.0270		.0000	.0373	.0351	.0273
.500					.0422	
.600			.0318	.0309	.0237	.0304
.650			.0282	.0324		
.700	.0262	.0322	.0289	.0315	.0345	
.750		.0417	.0386	.0410		
.800	.0415	.0465	.0451	.0453	.0494	.0402
.920	.0297	.0313	.0381	.0387	.0426	.0388
.950			.0460		.0465	
1.000	.0341	.0000	.0429	.0377	.0395	.0000



DATE 06 JUN 75

TABULATED DATA - IH16

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IH16 S6

SOLID ROCKET BOOSTER SURFACE

(RPO55A) ( 31 OCT 74 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2680.0000 SQ.FT. XMRP = .8500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/BM  
 BREF = 836.6820 IN. ZMRP = .0000 Z  
 SCALE = .0060

HACH = 3.700 RN/L = 5.000  
 BETA = .000

ALPHA ( 1 ) = -5.000 HAH/HT( 1 ) = .850 HACH = 3.700 TO = 726.000 HO = 9545.300 RN/L = 4.600

SECTION ( 1 ) SOLID ROCKET BOSTR

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000					
.004					
.025					
.050					
.100					
.112					
.150					
.200					
.300					
.400	.0365				
.500					
.600					
.650					
.700	.0297	.0654			
.750		.2218			
.800	.1602	.4220	1.0095	.4775	.2200
.920	.4106	.7632	1.1885	1.1773	.6049
.950			1.3983		.5082
1.000	.8387	.0000	3.1852	1.1397	.4156

ALPHA ( 1 ) = -5.000 HAH/HT( 2 ) = .900 HACH = 3.700 TO = 726.000 HO = 9545.300 RN/L = 4.600

SECTION ( 1 ) SOLID ROCKET BOSTR

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000					
.004					
.025					
.050					
.100					
.112					
.150					
.200					
.300					
.400	.0218				
.500					

IH15 SB

SOLID ROCKET BOOSTER SURFACE

(RPQ55A)

ALPHA ( 1 ) = -5.000 HAH/HT( 2 ) = .900

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.800			.0395	.0344	.0153	.0198
.650			.0382	.0363		
.700	.0163	.0345	.0374	.0323	.0220	
.750		.0788	.0998	.0792		
.800	.0650	.1162	.1513	.1149	.0804	.0654
.920	.1240	.1596	.2035	.1949	.1657	.1041
.950			.2288		.1653	
1.000	.1653	.0000	.2431	.1973	.1423	.0000

ALPHA ( 1 ) = -5.000 HAH/HT( 3 ) = 1.000 HACH = 3.700 TO = 726.000 HO = 9545.300 RN/L = 4.600

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.000			.1352			
.004					.0935	
.025					.1023	
.050			.0000		.0759	
.100			.0512		.0432	
.112					.0366	
.150					.0143	
.200			.0202	.0181	.0144	.0068
.300				.0189	.0133	
.400	.0120		.0000	.0202	.0139	.0064
.500					.0170	
.600			.0211	.0184	.0084	.0104
.650			.0202	.0183		
.700	.0086	.0178	.0189	.0164	.0113	
.750		.0344	.0396	.0332		
.800	.0297	.0475	.0560	.0458	.0354	.0317
.920	.0517	.0518	.0768	.0730	.0678	.0470
.950			.0881		.0704	
1.000	.0834	.0000	.0854	.0744	.0515	.0000



DATE 08 JUN 75

TABULATED DATA - IH18

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IH18 SB SOLID ROCKET BOOSTER SURFACE (RPQ55A1)

ALPHA ( 2 ) = .000 HAH/HT( 1 ) = .850 MACH = 3.700 TO = 725.000 HO = 9573.800 RN/L = 4.620

SECTION ( 1 ) SOLID ROCKET BOSTR DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000					
.004					
.025					
.050					
.100					
.112					
.150					
.200					
.300					
.400	.0195				
.500					
.600					
.650					
.700	.0130	.0162			
.750		.0417			
.800	.0830	.0816			
.920	.3207	.3578			
.950		.7193			
1.000	.5099	.0000	.8163	.7026	.4546

ALPHA ( 2 ) = .000 HAH/HT( 2 ) = .900 MACH = 3.700 TO = 725.000 HO = 9573.800 RN/L = 4.620

SECTION ( 1 ) SOLID ROCKET BOSTR DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000					
.004					
.025					
.050					
.100					
.112					
.150					
.200					
.300					
.400	.0120				
.500					
.600					
.650					
.700	.0073	.0082			
.750		.0214			
.800	.0374	.0375			
.920	.1035	.1094			
.950		.1781			

IH16 S5

SOLID ROCKET BOOSTER SURFACE

(RPQSSA)

ALPHA ( 2 ) = .000 HAW/HT ( 2 ) = .900

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

1.000 .1311 .0000 .1730 .1504 .1413 .0000

ALPHA ( 2 ) = .000 HAW/HT ( 3 ) = 1.000 MACH = 3.700 TO = 725.000 HO = 9573.600 RN/L = 4.620

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.000			.1137			
.004					.0957	
.025					.0946	
.050			.0000		.0720	
.100			.0376		.0394	
.112					.0334	
.150					.0133	
.200			.0125	.0123	.0128	.0083
.300				.0103	.0102	
.400	.0067		.0000	.0097	.0095	.0069
.500					.0110	
.600			.0080	.0082	.0064	.0074
.650			.0063	.0078		
.700	.0039	.0049	.0045	.0053	.0055	
.750		.0108	.0099	.0118		
.800	.0178	.0180	.0179	.0189	.0212	.0186
.920	.0436	.0455	.0549	.0551	.0602	.0537
.950			.0701		.0688	
1.000	.0528	.0000	.0672	.0621	.0594	.0000

ALPHA ( 3 ) = 20.000 HAW/HT ( 1 ) = .850 MACH = 3.700 TO = 725.000 HO = 9545.900 RN/L = 4.570

SECTION ( 1 ) SOLID ROCKET BOOSTER

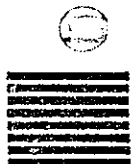
DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.000			-.3186			
.004					-.8295	
.025					-.2377	
.050			.0000		-.2193	
.100			.2707		-.7539	
.112					.8677	
.150					.2123	
.200			.0848	.1275	.2062	.1040
.300				.1200	.1962	





DATE 06 JUN 75

TABULATED DATA - IH16

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IH16 56

SOLID ROCKET BOOSTER SURFACE

(RPQ55A)

ALPHA ( 3 ) = 20.000 HAH/HT( 1 ) = .650

SECTION ( 1 ) SOLID ROCKET BOOSTER DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.400	.0431		.2900	.1436	.2239	.1183
.500					.3612	
.600			.0636	.1374	.2171	.1723
.650			.0638	.1443		
.700	.0671	.0733	.0754	.1783	.3764	
.750		.1354	.1575	20.7788		
.800	.2778	.2138	.2907	161.5258	-.4128	-1.8553
.920	.3094	.2740	.4993	-1.1852	-.4269	-.8145
.950			.6438		-.3825	
1.000	-10.8182	.0000	.7368	-1.0959	-.4790	.0000

ALPHA ( 3 ) = 20.000 HAH/HT( 2 ) = .900 HACH = 3.700 TO = 729.000 HO = 9545.900 RN/L = 4.570

SECTION ( 1 ) SOLID ROCKET BOOSTER DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.000			1.5248			
.004					.4328	
.025					3.3724	
.050			.0000		2.4453	
.100			.1003		.2715	
.112					.1695	
.150					.0877	
.200			.0388	.0657	.7913	.0513
.300				.0625	.0862	
.400	.0257		.0000	.0717	.0925	.0581
.500					.1223	
.600			.0376	.0665	.0750	.0764
.650			.0373	.0704		
.700	.0375	.0415	.0421	.0788	.1185	
.750		.0652	.0727	.2715		
.800	.1005	.0883	.1105	.1	.6178	.2255
.920	.0974	.0960	.1500	.2743	.5396	.2974
.950			.1649		.6503	
1.000	.1657	.0000	.1805	.2815	.4596	.0000

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IH16 SB

SOLID ROCKET BOOSTER SURFACE

(RPGSSA)

ALPHA ( 3 ) = 20.000 HAH/HT( 3 ) = 1.000 MACH = 3.700 TO = 729.000 HO = 9548.900 RN/L = 4.570

SECTION ( 1 ) SOLID ROCKET BOOSTER DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.000		.1213			
.004			.0989		
.025			.1075		
.050		.0000	.0967		
.100		.0444	.0730		
.112			.0650		
.150			.0403		
.200		.0215	.0334	.0432	.0255
.300			.0319	.0406	
.400	.0142	.0000	.0358	.0425	.0288
.500			.0526		
.600		.0207	.0327	.0325	.0362
.650		.0204	.0348		
.700	.0189	.0222	.0224	.0371	.0500
.750		.0320	.0350	.0667	
.800	.0441	.0406	.0493	.0738	.1031
.920	.0411	.0417	.0625	.0792	.0976
.950			.0663	.1016	
1.000	.0547	.0000	.0628	.0801	.0934

ALPHA ( 4 ) = 45.000 HAH/HT( 1 ) = .850 MACH = 3.700 TO = 730.000 HO = 9498.400 RN/L = 4.540

SECTION ( 1 ) SOLID ROCKET BOOSTER DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.000		-.2272			
.004			-.3285		
.025			-.1280		
.050		.0000	-.1006		
.100		3.6355	-.1401		
.112			-.2190		
.150			-.1968		
.200		.2583	-.8028	-.2711	-.3229
.300			-1.6551	-.2871	
.400	.0452	.0000	-3.6355	-.3627	-1.4814
.500				-.3008	
.600		.1406	-13.2141	-.2036	-.7789
.650		.1275	3.5667		
.700	.0535	.0803	.1478	-2.4575	-.3292
.750		.1937	.2528	-.3670	
.800	.2737	.3248	.7864	-.2609	-.0990
.920	.1353	.1333	.5143	-.1968	-.1078
.950			1.5398		-.1097





DATE 05 JUN 75

TABULATED DATA - IH16

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IH16 58

SOLID ROCKET BOOSTER SURFACE

(RPQ55A)

ALPHA ( 4 ) = 45.000 HAH/HT( 1 ) = .850

SECTION ( 1 ) SOLID ROCKET BOSTR DEPENDENT VARIABLE H/HREF

PHI 80.0000135.0000180.0000225.0000270.0000315.0000

X/L

1.000 -.2233 .0000 2.0338 -.2611 -.1588 .0000

ALPHA ( 4 ) = 45.000 HAH/HT( 2 ) = .800 MACH = 3.700 TO = 730.000 HO = 9488.400 RN/L = 4.540

SECTION ( 1 ) SOLID ROCKET BOSTR DEPENDENT VARIABLE H/HREF

PHI 80.0000135.0000180.0000225.0000270.0000315.0000

X/L

.000			-3.5446		
.004				1.0038	
.025				-.4314	
.050		.0000		-.2666	
.100		.1618		-.5105	
.112				-26.8587	
.150				6.3278	
.200		.0946	.2745	1.6319	.2878
.300			.2269	.9313	
.400	.0235	.0000	.2223	.5083	.1875
.500				.8919	
.600		.0689	.1835	.4720	.2438
.650		.0639	.1853		
.700	.0290	.0433	.0709	.2121	.6096
.750		.0839	.1027	.5260	
.800	.0841	.1045	.1631	1.0435	-.2412-21.2389
.920	.0538	.0580	.1381	-5.3281	-.2620 -1.0499
.950			.1855	-.2564	
1.000	.3716	.0000	.1828	1.1831	-.7214 .0000

ALPHA ( 4 ) = 45.000 HAH/HT( 3 ) = 1.000 MACH = 3.700 TO = 730.000 HO = 9488.400 RN/L = 4.540

SECTION ( 1 ) SOLID ROCKET BOSTR DEPENDENT VARIABLE H/HREF

PHI 80.0000135.0000180.0000225.0000270.0000315.0000

X/L

.000			.1257		
.004				.1102	
.025				.1154	
.050		.0000		.1158	
.100		.0556		.1190	
.112				.1108	
.150				.0939	
.200		.0417	.0745	.1085	.0802
.300			.0893	.0882	

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DATE 08 JUN 75

TABULATED DATA - IH18

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IH18 S8

SOLID ROCKET BOOSTER SURFACE

(RP055A)

ALPHA ( 4 ) = 45.000 HAH/HT( 3 ) = 1.000

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.400	.0120		.0000	.0714	.0878	.0578
.500					.0998	
.600			.0341	.0808	.0618	.0872
.650			.0320	.0640		
.700	.0151	.0226	.0348	.0669	.0909	
.750		.0393	.0470	.0897		
.800	.0353	.0443	.0630	.0949	.1287	.0876
.920	.0244	.0272	.0561	.1042	.1407	.1081
.950			.0672		.1531	
1.000	.0587	.0000	.0647	.0981	.1185	.0000

ALPHA ( 5 ) = 70.000 HAH/HT( 1 ) = .850 MACH = 3.700 TO = 728.000 HO = 9517.400 RN/L = 4.550

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.000			-.2442			
.004				-.2797		
.025				-.1035		
.050			.0000	-.0735		
.100			-.9098	-.0841		
.112				-.0990		
.150				-.0891		
.200			1.9042	-.2132	-.1258	-.1207
.300				-.2381	-.1230	
.400	.0470		.0000	-.2179	-.1182	-.1622
.500					-.1062	
.600			.3818	-.1888	-.0717	-.1510
.650			.3060	-.2428		
.700	.0521	.0875	.3920	-.2019	-.1162	
.750		.1395	.3499	-.2018		
.800	.1556	.2040	1.0990	-.1674	-.0740	-.1154
.920	.0809	.0874	.4194	-.2031	-.1202	-.1664
.950			.4843		-.1250	
1.000	.1252	.0000	.3442	-.2877	-.1351	.0000



DATE 06 JUN 75

TABULATED DATA - IH16

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IH16 S6

SOLID ROCKET BOOSTER SURFACE

(RPOSSA)

ALPHA ( 5) = 70.000 HAW/HT( 2) = .900 MACH = 3.700 TO = 728.000 HO = 9517.400 RN/L = 4.560

SECTION ( 1) SOLID ROCKET BOOSTER DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000		2.6229			
.004			.9325		
.025			-.3332		
.050		.0000	-.1721		
.100		.1941	-.1777		
.112			-.2192		
.150			-.1994		
.200		.1627	4.3521	-.3160	-.6770
.300			1.4286	-.3246	
.400	.0243	.0000	11.1109	-.3022	-8.5975
.500				-.2330	
.600		.1166	3.0879	-.1642	-.9142
.650		.1031	1.2059		
.700	.0283	.0499	.1133	10.2976	-.2896
.750		.0650	.1096	-7.5404	
.800	.0645	.0825	.1599	-1.6183	-.1408
.920	.0399	.0482	.1153	2.8774	-.3295
.950			.1238		-.3014
1.000	.0526	.0000	.1064	.6783	-.3886

ALPHA ( 5) = 70.000 HAW/HT( 3) = 1.000 MACH = 3.700 TO = 728.000 HO = 9517.400 RN/L = 4.560

SECTION ( 1) SOLID ROCKET BOOSTER DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000		.1071			
.004			.0955		
.025			.0969		
.050		.0000	.1021		
.100		.0566	.1449		
.112			.1536		
.150			.1351		
.200		.0575	.0993	.1554	.0824
.300			.0952	.1424	
.400	.0123	.0000	.1058	.1431	.0835
.500				.1680	
.600		.0488	.0906	.1038	.1003
.650		.0443	.0932		
.700	.0148	.0253	.0468	.0981	.1460
.750		.0315	.0482	.1050	
.800	.0297	.0378	.0590	.0991	.1745
.920	.0198	.0225	.0471	.0918	.1327
.950		.0497		.1655	

DATE 06 JUN 75

TABULATED DATA - IH16

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IH16 SS

SOLID ROCKET BOOSTER SURFACE

(RPQ55A)

ALPHA ( 5 ) = 70.000 HAW/HT ( 3 ) = 1.000

SECTION ( 1 ) SOLID ROCKET BOOSTER DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L						
1.000	.0244	.0000	.0447	.0841	.1412	.0000

ALPHA ( 6 ) = 90.000 HAW/HT ( 1 ) = .650 MACH = 3.700 TO = 731.000 HD = 9526.900 RN/L = 4.540

SECTION ( 1 ) SOLID ROCKET BOOSTER DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L						
.000						
.004						
.025						
.050		.0000				
.100		-2.5607				
.112						
.150						
.200		12.3428	-.2020	-.1228	-.1148	
.300			-.2107	-.1165		
.400	.0547	.0000	-.1917	-.1107	-.1441	
.500				-.0998		
.600		.6337	-.1760	-.0673	-.1352	
.650		.4623	-.2079			
.700	.0620	.1128	.7161	-.1752	-.1069	
.750		.1684	.5362	-.1769		
.800	.2121	.2356	1.3132	-.2106	-.1178	-.1552
.920	.0817	.1290	.6343	-.2257	-.1454	-.1961
.950			4.5162		-.1507	
1.000	.1346	.0000	-.4016	-.1147	-.1041	.0000

ALPHA ( 6 ) = 90.000 HAW/HT ( 2 ) = .900 MACH = 3.700 TO = 731.000 HD = 9526.900 RN/L = 4.540

SECTION ( 1 ) SOLID ROCKET BOOSTER DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L						
.000						
.004						
.025						
.050		.0000				
.100		.1680				
.112						
.150						
.200		.1830	-4.3027	-.2759	-.4531	
.300			-8.7670	-.2589		





DATE 06 JUN 75

TABULATED DATA - IH16

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IH16 56

SOLID ROCKET BOOSTER SURFACE

(RPQ55A)

ALPHA ( 6 ) = 90.000 HAH/HT ( 2 ) = .900

SECTION ( 1 ) SOLID ROCKET BOSTR DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.400	.0260	.0000	-1.1765	-.2356	-.7640
.500				-.1929	
.600			.1367	-1.5446	-.1345
.650			.1216	-5.2745	-.4403
.700	.0307	.0531	.1370	-1.0403	-.2226
.750		.0708	.1253	-1.0389	
.800	.0711	.0845	.1622	-4.4869	-.2539
.850	.0375	.0536	.1303	1.9450	-.4266
.920			.1837	-.4262	
.950				-.2200	.0000
1.000	.0559	.0000	.3435	-.3464	

ALPHA ( 6 ) = 90.000 HAH/HT ( 3 ) = 1.000 MACH = 3.700 TO = 731.000 HO = 9526.900 RN/L = 4.540

SECTION ( 1 ) SOLID ROCKET BOSTR DEPENDENT VARIABLE H/HREF

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.000			.0946		
.004				.0834	
.025				.0835	
.050			.0000	.0882	
.100			.0536	.1327	
.112				.1559	
.150				.1512	
.200			.0616	.1086	.0926
.300				.1093	.1792
.400	.0127		.0000	.1268	.1875
.500				.2231	.1005
.600			.0532	.1061	.1349
.650			.0492	.1105	.1254
.700	.0153	.0258	.0524	.1172	.1914
.750		.0328	.0495	.1188	
.800	.0305	.0370	.0589	.1133	.1944
.850	.0180	.0247	.0503	.0861	.1488
.920			.0630	.1605	.1059
.950				.1791	.0000
1.000	.0258	.0000	.0729	.1140	

IH16 0898 + T8 + S6 ORBITER FUSELAGE SURFACE

(0P0801) ( 31 OCT 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/BW  
 BREF = 936.6820 IN. ZMRP = .0000 Z  
 SCALE = .0060

## PARAMETRIC DATA

MACH = 3.700 ALPHA = .000  
 BETA = .000 DELTA = .175

RN/L ( 1 ) = 1.930 ALPHA ( 1 ) = .000 MACH = 3.700 T0 = 719.000 HD = 3968.500 RN/L = 1.930

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE QDOT

Y(BP) .0000 70.0000

X/L

.088	.2091
.100	.1830
.125	.1234
.150	.0526
.175	.0357
.200	.0505
.250	.1141
.300	.1671
.350	.2325
.400	.2317
.500	.2270
.600	.1960
.700	.1431
.800	.0930
.900	.0460
1.000	.0569

RN/L ( 2 ) = 4.570 ALPHA ( 1 ) = .000 MACH = 3.700 T0 = 724.000 HD = 9462.500 RN/L = 4.570

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE QDOT

Y(BP) .0000 70.0000

X/L

.088	.2833
.100	.2648
.125	.1955
.150	.1000
.175	.0837
.200	.1645
.250	.3275
.300	.3895
.350	.4088
.400	.4425
.500	.3839
.600	.3248
.700	.2451
.800	.1745



DATE 08 JUN 75      TABULATED DATA - IH16

(080301)

IH16 0803 + TB + SB      ORBITER FUSELAGE SURFACE

RN/L ( 2 ) = 4.570      ALPHA ( 1 ) = .000

SECTION ( 1 ) ORBITER FUSELAGE      DEPENDENT VARIABLE COOT

Y(BP)      .0000 70.0000

X/L

.900      .1209      .1627  
1.000      .1331      .1285

DATE 08 JUN 75

TABULATED DATA - IH16

PAGE 154

IH16 089B + T8 + S8 ORBITER FUSELAGE SURFACE

(QP0802) ( 31 OCT 74 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/BW  
 BREF = 936.6820 IN. ZMRP = .0000 Z  
 SCALE = .0060

MACH = 3.700 ALPHA = -5.000  
 BETA = .000 DELTAH = .175

RN/L ( 1 ) = 1.890 ALPHA ( 1 ) = -5.000 MACH = 3.700 TO = 708.000 HD = 3961.000 RN/L = 1.890

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE QDOT

Y(BP) .0000 70.0000

X/L

.088	.2104
.100	.1870
.125	.1460
.150	.0781
.175	.0556
.200	.0652
.250	.0971
.300	.0987
.350	.1593
.400	.1667
.500	.1313
.600	.1371
.700	.1070
.800	.0785
.900	.0517
1.000	.0520

RN/L ( 2 ) = 4.560 ALPHA ( 1 ) = -5.000 MACH = 3.700 TO = 725.000 HD = 9453.000 RN/L = 4.560

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE QDOT

Y(BP) .0000 70.0000

X/L

.088	.3158
.100	.2814
.125	.2278
.150	.1280
.175	.1163
.200	.1883
.250	.3126
.300	.3830
.350	.4583
.400	.4987
.500	.4258
.600	.3897
.700	.3237
.800	.2830





DATE 05 JUN 75

TABULATED DATA - IH18

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IH18 0898 + T8 + 66 ORBITER FUSELAGE SURFACE

(QP0802)

RN/L ( 2 ) = 4.580 ALPHA ( 1 ) = -5.000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE QDOT

Y(BP) .0000 70.0000

X/L

.900	.1817	.1847
1.000	.1562	.1530

DATE 08 JUN 75

TABULATED DATA - IH16

PAGE 156

IH16 089B

ORBITER FUSELAGE SURFACE

(OPQB11) ( 31 OCT 74 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/SH  
 BREF = 936.6820 IN. ZMRP = .0000 Z  
 SCALE = .0060

MACH = 3.700 ALPHA = .000  
 BETA = .000

RN/L ( 1 ) = 1.910 ALPHA ( 1 ) = .000 MACH = 3.700 TO = 719.000 HD = 3921.400 RN/L = 1.910

## SECTION ( 1 ) ORBITER FUSELAGE

## DEPENDENT VARIABLE QDOT

Y(BP) .0000 70.0000

## X/L

.088 .0000  
 .100 .1501  
 .125 .1174  
 .150 .0702  
 .175 .0569  
 .200 .0495  
 .250 .0488  
 .300 .0492  
 .350 .0830  
 .375 .0853  
 .400 .0517 .0885  
 .500 .0508 .0676  
 .600 .0487 .0577  
 .700 .0410 .0502  
 .800 .0273 .0427  
 .900 .0263 .0305  
 1.000 .0838 .0884  
 1.025 .0923

RN/L ( 2 ) = 4.540 ALPHA ( 1 ) = .000 MACH = 3.700 TO = 727.000 HD = 9412.600 RN/L = 4.540

## SECTION ( 1 ) ORBITER FUSELAGE

## DEPENDENT VARIABLE QDOT

Y(BP) .0000 70.0000

## X/L

.088 .0000  
 .100 .2292  
 .125 .1859  
 .150 .1120  
 .175 .0941  
 .200 .0817  
 .250 .0834  
 .300 .0805  
 .350 .1549  
 .375 .1803  
 .400 .0984 .1584  
 .500 .1025 .1239





(0P0811)

ORBITER FUSELAGE SURFACE

TABLATED DATA - IH16

IH16 0898

RN/L ( 2 ) = 4.540 ALPHA ( 1 ) = .000

DEPENDENT VARIABLE 000T

SECTION ( 1 ) ORBITER FUSELAGE

Y(BP) .0000 70.0000

X/L

.800	.1174	.1188
.700	.1795	.0985
.600	.1935	.0941
.500	.1896	.0774
1.000	.2283	.1933
1.025		.2363

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DATE 08 JUN 75

TABULATED DATA - IH18

PAGE 158

IH18 0858

ORBITER FUSELAGE SURFACE

(080812) ( 31 OCT 74 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 8880.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/BH  
 BREF = 936.8820 IN. ZMRP = .0000 Z  
 SCALE = .0060

MACH = 3.700 ALPHA = -5.000  
 BETA = .000

RN/L ( 1 ) = 1.950 ALPHA ( 1 ) = -5.000 MACH = 3.700 TO = 715.000 HO = 3953.800 RN/L = 1.950

## SECTION ( 1 ) ORBITER FUSELAGE

## DEPENDENT VARIABLE COOT

Y(BP) .0000 70.0000

## X/L

.088	.0000
.100	.1148
.125	.0870
.150	.0498
.175	.0383
.200	.0319
.250	.0332
.300	.0387
.350	.0519
.375	.0550
.400	.0571
.500	.0781
.600	.1049
.700	.0979
.800	.0766
.900	.0663
1.000	.0713
1.025	.0654

RN/L ( 2 ) = 4.560 ALPHA ( 1 ) = -5.000 MACH = 3.700 TO = 725.000 HO = 8441.100 RN/L = 4.560

## SECTION ( 1 ) ORBITER FUSELAGE

## DEPENDENT VARIABLE COOT

Y(BP) .0000 70.0000

## X/L

.088	.3629
.100	.1786
.125	.1450
.150	.0830
.175	.0660
.200	.0567
.250	.0583
.300	.0788
.350	.1178
.375	.1348
.400	.1181
.500	.1701



DATE 08 JUN 75

TABULATED DATA - IH18

PAGE 158

IH18 0898

ORBITER FUSELAGE SURFACE

(020812)

RN/L ( 2 ) = 4.580 ALPHA ( 1 ) = -5.000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE QDOT

Y(BP) .0000 70.0000

X/L

.600	.2504	.2623
.700	.2578	.2555
.800	.2162	.2372
.900	.1804	.1914
1.000	.1859	.2122
1.025	.2027	

DATE 03 JUN 75

TABULATED DATA - IH16

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IH16 0899 + T8 + S8 ORBITER FUSELAGE SURFACE

(0P0813) ( 31 OCT 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/BW  
 BREF = 936.6820 IN. ZMRP = .0000 Z  
 SCALE = .0060

MACH = 3.700 ALPHA = .000  
 BETA = .000 DELTAH = .059

RN/L ( 1 ) = 1.890 ALPHA ( 1 ) = .000 MACH = 3.700 TO = 723.000 HD = 4087.200 RN/L = 1.990

## SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE QDOT

Y(BP) .0000 70.0000

X/L

.088 .1135  
 .100 .1119  
 .125 .1409  
 .150 .1189  
 .175 .1199  
 .200 .1117  
 .250 .1231  
 .300 .1671  
 .350 .2482  
 .400 .2579  
 .500 .1793 .1627  
 .600 .1299 .1045  
 .700 .0946 .0831  
 .800 .0763 .0887  
 .900 .0452 .0589  
 1.000 .0588 .0627

RN/L ( 2 ) = 4.550 ALPHA ( 1 ) = .000 MACH = 3.700 TO = 720.000 HD = 9498.400 RN/L = 4.550

## SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE QDOT

Y(BP) .0000 70.0000

X/L

.088 .2470  
 .100 .2266  
 .125 .3256  
 .150 .2822  
 .175 .2788  
 .200 .2683  
 .250 .3428  
 .300 .4359  
 .350 .4962  
 .400 .4832  
 .500 .3435 .3072  
 .600 .2763 .2141  
 .700 .1952 .1820  
 .800 .2400 .2642



(090813)

DATE 06 JUN 75

TABULATED DATA - IH16  
IH16 0898 + T8 + S6 ORBITER FUSELAGE SURFACE

RN/L ( 2) = 4.550 ALPHA ( 1) = .000

SECTION ( 1) ORBITER FUSELAGE DEPENDENT VARIABLE QDOT

Y(BP) .0000 70.0000

X/L  
.900 .1884 .1529  
1.000 .1782 .1709

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DATE 06 JUN 75

TABULATED DATA - IH16

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IH16 0899 + T8 + S5 ORBITER FUSELAGE SURFACE

(090814) ( 31 OCT 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/BH  
 BREF = 936.6820 IN. ZMRP = .0000 Z  
 SCALE = .0060

## PARAMETRIC DATA

MACH = 3.700 ALPHA = -5.000  
 BETA = .000 DELTAH = .069

RN/L ( 1 ) = 2.000 ALPHA ( 1 ) = -5.000 MACH = 3.700 TO = 720.000 HO = 4102.800 RN/L = 2.000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE QDOT

Y(BP) .0000 70.0000

X/L

.088	.1941
.100	.1826
.125	.1783
.150	.1247
.175	.1137
.200	.0986
.250	.0969
.300	.1012
.350	.1782
.400	.1867
.500	.1255 .1305
.600	.1200 .1037
.700	.0996 .1018
.800	.0782 .1015
.900	.0475 .0860
1.000	.0747 .0741

RN/L ( 2 ) = 4.470 ALPHA ( 1 ) = -5.000 MACH = 3.700 TO = 723.000 HO = 9261.100 RN/L = 4.470

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE QDOT

Y(BP) .0000 70.0000

X/L

.088	.3054
.100	.2833
.125	.3140
.150	.2398
.175	.2241
.200	.2043
.250	.2381
.300	.3174
.350	.4817
.400	.4892
.500	.3871 .3480
.600	.3443 .2832
.700	.3181 .2934
.800	.3114 .2982



DATE 08 JUN 78

TABULATED DATA - IH18

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IH18 0898 + 78 + 98 ORBITER FUSELAGE SURFACE

(QP0814)

RN/L ( 2 ) = 4.470 ALPHA ( 1 ) = -5.000

SECTION ( 1 ) ORBITER FUSELAGE

DEPENDENT VARIABLE QDOT

Y(BP) .0000 70.0000

X/L

.900	.1558	.1485
1.000	.1686	.1750

DATE 08 JUN 78

TABULATED DATA - IH18

PAGE 154

IH18 0898+TB+SB+ORBIT ORBITER FUSELAGE SURFACE

(OPQB15) ( 31 OCT 74 )

## REFERENCE DATA

SREF = 2890.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/BH  
 BREF = 936.6820 IN. ZMRP = .0000 Z  
 SCALE = .0060

## PARAMETRIC DATA

MACH = 3.700 ALPHA = .000  
 BETA = .000 DELTAH = .175  
 GRITNO = 25.000

RN/L ( 1 ) = 1.890 ALPHA ( 1 ) = .000 MACH = 3.700 TO = 725.000 HO = 3909.300 RN/L = 1.890

## SECTION ( 1 ) ORBITER FUSELAGE

## DEPENDENT VARIABLE QDOT

Y(BP) .0000 70.0000

## X/L

.088	.2144
.100	.2012
.125	.1723
.150	.1143
.175	.1212
.200	.1676
.250	.2397
.300	.2448
.350	.2615
.400	.2640
.500	.2014 .1796
.600	.1652 .1315
.700	.1156 .1004
.800	.0767 .0931
.900	.0550 .0744
1.000	.0538 .0572

RN/L ( 2 ) = 4.620 ALPHA ( 1 ) = .000 MACH = 3.700 TO = 723.000 HO = 9494.500 RN/L = 4.620

## SECTION ( 1 ) ORBITER FUSELAGE

## DEPENDENT VARIABLE QDOT

Y(BP) .0000 70.0000

## X/L

.088	.2059
.100	.1854
.125	.3052
.150	.3030
.175	.3575
.200	.4028
.250	.4357
.300	.4194
.350	.4925
.400	.5174
.500	.3785 .3463
.600	.3371 .2658
.700	.2649 .2060
.800	.1808 .2442





DATE 06 JUN 75

TABULATED DATA - IH18

PAGE 165

IH18 0898+TB+58+CRIT ORBITER FUSELAGE SURFACE

(020815)

RN/L ( 2 ) = 4.620 ALPHA ( 1 ) = .000

SECTION ( 1 ) ORBITER FUSELAGE DEPENDENT VARIABLE QDOT

Y(BP) .0000 70.0000

X/L

.900 .1854 .1828  
1.000 .1747 .1269

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DATE 06 JUN 75

TABULATED DATA - IH16

PAGE 166

IH16 0898 + GRIT

ORBITER FUSELAGE SURFACE

(0PQ816) ( 31 OCT 74 )

## PARAMETRIC DATA

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/BH  
 BREF = 936.6820 IN. ZMRP = .0000 Z  
 SCALE = .0080

MACH = 3.700 ALPHA = .000  
 BETA = .000 GRITNO = 25.000

RN/L ( 1 ) = 1.910 ALPHA ( 1 ) = .000 MACH = 3.700 TO = 725.000 HO = 3959.300 RN/L = 1.910

## SECTION ( 1 ) ORBITER FUSELAGE

## DEPENDENT VARIABLE QDOT

Y(BP) .0000 70.0000

## X/L

.088 .1878  
 .100 .1643  
 .125 .1418  
 .150 .0940  
 .175 .0770  
 .200 .0730  
 .250 .0781  
 .300 .0727  
 .350 .1125  
 .375 .1138  
 .400 .0819 .1168  
 .500 .0759 .0892  
 .600 .0883 .0924  
 .700 .1022 .1132  
 .800 .1021 .1174  
 .900 .0961 .0929  
 1.000 .0938 .0817  
 1.025 .0818

RN/L ( 2 ) = 4.570 ALPHA ( 1 ) = .000 MACH = 3.700 TO = 731.000 HO = 9553.100 RN/L = 4.570

## SECTION ( 1 ) ORBITER FUSELAGE

## DEPENDENT VARIABLE QDOT

Y(BP) .0000 70.0000

## X/L

.088 .2785  
 .100 .2458  
 .125 .2354  
 .150 .1874  
 .175 .1846  
 .200 .2022  
 .250 .2612  
 .300 .2792  
 .350 .3555  
 .375 .3537  
 .400 .3078 .3773  
 .500 .2940 .3049



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(OPQB16)

ORBITER FUSELAGE SURFACE

IH16 0898 + GRIT

RN/L ( 2 ) = 4.570 ALPHA ( 1 ) = .000

SECTION ( 1 ) ORBITER FUSELAGE DEPENDENT VARIABLE QDOT

Y(BP) .0000 70.0000

X/L

.600	.3071	.2872
.700	.2807	.2736
.800	.2276	.2520
.900	.1864	.1930
1.000	.1798	.1758
1.025		.1615

IH18 0898 + TB + SB ORBITER HING SURFACE

(OPQND1) ( 31 OCT 74 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2590.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 1/8W  
 BREF = 938.6820 IN. ZMRP = .0000 Z  
 SCALE = .0080

HACH = 3.700 ALPHA = .000  
 BETA = .000 DELTAH = .175

RN/L ( 1 ) = 1.930 ALPHA ( 1 ) = .000 HACH = 3.700 TO = 718.000 HO = 3968.500 RN/L = 1.930

## SECTION ( 1 ) ORBITER HING

## DEPENDENT VARIABLE QDOT

2Y/B .4000 .8000 .8000

## X/C

.175		.2411	
.200		.2537	
.225	.1703		
.250	.1654		.2983
.300	.0826	.2173	.2737
.400	.1550	.1946	
.500	.1513	.1646	.2293
.700	.1192	.1234	.1726
.850			.1317
.875		.0888	
.900	.0713		

RN/L ( 2 ) = 4.570 ALPHA ( 1 ) = .000 HACH = 3.700 TO = 724.000 HO = 8462.500 RN/L = 4.570

## SECTION ( 1 ) ORBITER HING

## DEPENDENT VARIABLE QDOT

2Y/B .4000 .8000 .8000

## X/C

.175		.3539	
.200		.3684	
.225	.2943		
.250	.2885		.4117
.300	.1540	.3401	.3962
.400	.2811	.3247	
.500	.2823	.2904	.3390
.700	.2602	.2422	.2812
.850			.1998
.875		.1775	
.900	.1858		



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IH16 0698 + T8 + S6 ORBITER WING SURFACE

(OPCH02) ( 31 OCT 74 )

## REFERENCE DATA

SREF = 2896.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/BW  
 BREF = 936.6820 IN. ZMRP = .0000 Z  
 SCALE = .0080

## PARAMETRIC DATA

MACH = 3.700 ALPHA = -5.000  
 BETA = .000 DELTAH = .175

RN/L ( 1 ) = 1.890 ALPHA ( 1 ) = -5.000 MACH = 3.700 TO = 708.000 H0 = 3961.000 RN/L = 1.990

## SECTION ( 1 ) ORBITER WING

## DEPENDENT VARIABLE QDOT

2Y/B .4000 .6000 .8000

## X/C

.175		.2248	
.200		.2402	
.225	.1600		
.250	.1650		.2717
.300	.0806	.2045	.2496
.400	.1671	.1797	
.500	.1549	.1540	.2075
.700	.1153	.1121	.1508
.850			.1145
.875		.0781	
.900	.0666		

RN/L ( 2 ) = 4.560 ALPHA ( 1 ) = -5.000 MACH = 3.700 TO = 725.000 H0 = 9453.000 RN/L = 4.560

## SECTION ( 1 ) ORBITER WING

## DEPENDENT VARIABLE QDOT

2Y/B .4000 .6000 .8000

## X/C

.175		.3528	
.200		.3763	
.225	.3305		
.250	.3511		.4078
.300	.1914	.3288	.3796
.400	.3813	.2980	
.500	.3362	.2691	.3224
.700	.2827	.2401	.2445
.850			.1867
.875		.1775	
.900	.1723		

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IH16 089B

ORBITER HING SURFACE

(OPQH11) ( 31 OCT 74 )

## PARAMETRIC DATA

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/BW  
 BREF = 936.6820 IN. ZMRP = .0000 Z  
 SCALE = .0060

MACH = 3.700 ALPHA = .000  
 BETA = .000

RN/L ( 1 ) = 1.910 ALPHA ( 1 ) = .000 MACH = 3.700 TO = 719.000 HO = 3921.400 RN/L = 1.510

## SECTION ( 1 ) ORBITER HING

## DEPENDENT VARIABLE QOOT

2Y/B .4000 .6000 .8000

## X/C

.175		.2255
.200		.2521
.225	.1698	
.250	.1654	.3018
.300	.1696	.2771
.400	.1457	.2622
.500	.1236	.2291
.600	.1005	.1955
.700	.0768	.1721
.800	.0549	.1434
.850		.1274
.875	.0836	
.900	.0453	

RN/L ( 2 ) = 4.540 ALPHA ( 1 ) = .000 MACH = 3.700 TO = 727.000 HO = 9412.600 RN/L = 4.540

## SECTION ( 1 ) ORBITER HING

## DEPENDENT VARIABLE QOOT

2Y/B .4000 .6000 .8000

## X/C

.175		.3538
.200		.3992
.225	.3010	
.250	.2939	.4380
.300	.2991	.4068
.400	.2689	.3836
.500	.2385	.3447
.600	.1965	.2921
.700	.1688	.2622
.800	.1640	.2146
.850		.1897
.875	.1597	
.900	.1123	





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IH16 0898

ORBITER WING SURFACE

(OPQH12) ( 31 OCT 74 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2590.0000 SQ.FT. XMRP = .6500 X/LB  
LREF = 474.8100 IN. YMRP = .0000 Y/BW  
BREF = 936.6820 IN. ZMRP = .0000 Z  
SCALE = .0060

MACH = 3.700 ALPHA = -5.000  
BETA = .000

RN/L ( 1 ) = 1.950 ALPHA ( 1 ) = -5.000 MACH = 3.700 TO = 715.000 HO = 3953.800 RN/L = 1.950

## SECTION ( 1 ) ORBITER WING

## DEPENDENT VARIABLE ROOT

2Y/B .4000 .6000 .8000

## X/C

.175		.1779	
.200		.2043	
.225	.1032		
.250	.0943		.2569
.300	.0941	.1722	.2331
.400	.0762	.1466	.2204
.500	.0530	.1246	.1906
.600	.0526	.0982	.1607
.700	.0474	.0838	.1394
.800	.0516	.0700	.1160
.850			.1039
.875		.0569	
.900	.0325		

RN/L ( 2 ) = 4.560 ALPHA ( 1 ) = -5.000 MACH = 3.700 TO = 725.000 HO = 9441.100 RN/L = 4.560

## SECTION ( 1 ) ORBITER WING

## DEPENDENT VARIABLE ROOT

2Y/B .4000 .6000 .8000

## X/C

.175		.2658	
.200		.3100	
.225	.1753		
.250	.1709		.3779
.300	.1658	.2617	.3440
.400	.1455	.2281	.3303
.500	.1316	.2015	.2912
.600	.1224	.1630	.2443
.700	.1133	.1503	.2223
.800	.1378	.1335	.1878
.850			.1733
.875		.1269	
.900	.1115		

IH16 0899 + T8 + S6 ORBITER HING SURFACE

(OPQH13) ( 31 OCT 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/BH  
 SREF = 936.8020 IN. ZMRP = .0000 Z  
 SCALE = .0050

## PARAMETRIC DATA

HACH = 3.700 ALPHA = .000  
 BETA = .000 DELTAH = .069

RN/L ( 1 ) = 1.990 ALPHA ( 1 ) = .000 HACH = 3.700 TO = 723.000 HO = 4087.200 RN/L = 1.990

## SECTION ( 1 ) ORBITER HING

## DEPENDENT VARIABLE QDOT

2Y/B .4000 .6000 .8000

## X/C

.175		.2171	
.200		.2485	
.225	.1758		
.250	.1743		.3018
.300	.1773	.2146	.2735
.400	.1599	.1850	
.500	.1445	.1638	.2325
.700	.1054	.1180	.1739
.850			.1330
.875		.0819	
.900	.0617		

RN/L ( 2 ) = 4.550 ALPHA ( 1 ) = .000 HACH = 3.700 TO = 728.000 HO = 5498.400 RN/L = 4.550

## SECTION ( 1 ) ORBITER HING

## DEPENDENT VARIABLE QDOT

2Y/B .4000 .6000 .8000

## X/C

.175		.3430	
.200		.3950	
.225	.3252		
.250	.3281		.4490
.300	.3346	.3404	.4143
.400	.3101	.3036	
.500	.2817	.2671	.3588
.700	.2255	.2152	.2769
.850			.2095
.875		.1584	
.900	.1531		





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IH16 0898 + T8 + S6 ORBITER WING SURFACE

(OPCH14) ( 31 OCT 74 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/BW  
 BREF = 936.6820 IN. ZMRP = .0000 Z  
 SCALE = .0060

MACH = 3.700 ALPHA = -5.000  
 BETA = .000 DELTAH = .069

RN/L ( 1 ) = 2.000 ALPHA ( 1 ) = -5.000 MACH = 3.700 TO = 720.000 HO = 4102.800 RN/L = 2.000

## SECTION ( 1 ) ORBITER WING

## DEPENDENT VARIABLE QDOT

ZY/B .4000 .6000 .8000

## X/C

.175		.2053	
.200		.2313	
.225	.1782		
.250	.1684		.2721
.300	.1700	.1988	.2467
.400	.1539	.1798	
.500	.1375	.1511	.2083
.700	.0997	.1068	.1551
.850			.1200
.875		.0752	
.900	.0623		

RN/L ( 2 ) = 4.470 ALPHA ( 1 ) = -5.000 MACH = 3.700 TO = 723.000 HO = 9261.100 RN/L = 4.470

## SECTION ( 1 ) ORBITER WING

## DEPENDENT VARIABLE QDOT

ZY/B .4000 .6000 .8000

## X/C

.175		.3039	
.200		.3557	
.225	.3512		
.250	.3540		.3896
.300	.3489	.3047	.3594
.400	.3185	.2737	
.500	.2811	.2268	.3017
.700	.2156	.1608	.2301
.850			.1751
.875		.1181	
.900	.1427		

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(OPQ115) ( 31 OCT 74 )

IH16 0898+TB+SB+GRIT ORBITER HING SURFACE

## PARAMETRIC DATA

MACH = 3.700 ALPHA = .000  
 BETA = .000 DELTAH = .175  
 GRITNO = 25.000

## REFERENCE DATA

SREF = 2690.000 SQ.FT. XHRP = .6500 X/LB  
 LREF = 474.8100 IN. YHRP = .0000 Y/BH  
 BREF = 936.6820 IN. ZHRP = .0000 Z  
 SCALE = .0003

RN/L ( 1 ) = 1.890 ALPHA ( 1 ) = .000 MACH = 3.700 TO = 3509.300 RN/L = 1.890

## SECTION ( 1 ) ORBITER HING

DEPENDENT VARIABLE 0001

2Y/B .4000 .6000 .8000

X/C

.175 .2245  
 .200 .2559  
 .225 .1666  
 .250 .1628  
 .300 .1893  
 .360 .1893  
 .400 .1817  
 .500 .1433  
 .700 .1068  
 .850 .1241  
 .875 .1777  
 .900 .1371  
 .0606 .0877

RN/L ( 2 ) = 4.620 ALPHA ( 1 ) = .000 MACH = 3.700 TO = 723.000 HO = 9494.500 RN/L = 4.620

## SECTION ( 1 ) ORBITER HING

DEPENDENT VARIABLE 0001

2Y/B .4000 .6000 .8000

X/C

.175 .3482  
 .200 .4050  
 .225 .3008  
 .250 .2893  
 .300 .2818  
 .360 .3575  
 .400 .2767  
 .500 .3308  
 .700 .2830  
 .850 .2737  
 .875 .2505  
 .900 .2081  
 .1703 .1827





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TABULATED DATA - IH16

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IH16 0898 + ORIT

ORBITER WING SURFACE

(CPQH16) ( 31 OCT 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
LREF = 474.8100 IN. YMRP = .0000 Y/BH  
BREF = 936.6820 IN. ZMRP = .0000 Z  
SCALE = .0060

## PARAMETRIC DATA

MACH = 3.700 ALPHA = .000  
BETA = .000 GRITNO = 25.000

RN/L ( 1 ) = 1.910 ALPHA ( 1 ) = .000 MACH = 3.700 TO = 725.000 HD = 3959.300 RN/L = 1.910

## SECTION ( 1 ) ORBITER WING

## DEPENDENT VARIABLE QDOT

2Y/B .4000 .6000 .8000

## X/C

.175		.2345	
.200		.2730	
.225	.1903		
.250	.1862	.3223	
.300	.0000	.2283	.2944
.400	.1618	.2000	.2767
.500	.1403	.1739	.2451
.600	.1124	.1429	.2102
.700	.0954	.1315	.1840
.800	.0875	.1099	.1511
.850			.1382
.875		.0869	
.900	.0551		

RN/L ( 2 ) = 4.570 ALPHA ( 1 ) = .000 MACH = 3.700 TO = 731.000 HD = 9553.100 RN/L = 4.570

## SECTION ( 1 ) ORBITER WING

## DEPENDENT VARIABLE QDOT

2Y/B .4000 .6000 .8000

## X/C

.175		.3360	
.200		.3966	
.225	.2944		
.250	.2808	.4497	
.300	.0000	.3459	.4173
.400	.2573	.3164	.4021
.500	.2315	.2816	.3621
.600	.1931	.2421	.3117
.700	.1655	.2164	.2799
.800	.1518	.1868	.2357
.850			.2116
.875		.1574	
.900	.0960		

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IH16 0899 + TB + S6 ORBITER WINDSHIELD SURFACE

(QPOC01) ( 31 OCT 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XHRP = .6500 X/LB  
 LREF = 474.8100 IN. YHRP = .0000 Y/BW  
 BREF = 935.6820 IN. ZHRP = .0000 Z  
 SCALE = .0060

## PARAMETRIC DATA

MACH = 3.700 ALPHA = .000  
 BETA = .000 DELTAH = .175

RN/L ( 1 ) = 1.930 ALPHA ( 1 ) = .000 MACH = 3.700 TO = 719.000 HO = 3958.500 RN/L = 1.930

## SECTION ( 1 ) ORBITER WINDSHIELD

## DEPENDENT VARIABLE QDOT

X .0000

TAP NO  
 1.000 .5197  
 2.000 .4264  
 3.000 .4359  
 6.000 .2881

RN/L ( 2 ) = 4.570 ALPHA ( 1 ) = .000 MACH = 3.700 TO = 724.000 HO = 9462.500 RN/L = 4.570

## SECTION ( 1 ) ORBITER WINDSHIELD

## DEPENDENT VARIABLE QDOT

X .0000

TAP NO  
 1.000 .7890  
 2.000 .6256  
 3.000 .6329  
 6.000 .4281



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TABULATED DATA - IH16

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IH16 089B + TB + S6 ORBITER WINDSHIELD SURFACE

(QPQC02) ( 31 OCT 74 )

REFERENCE DATA

PARAMETRIC DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
LREF = 474.8100 IN. YMRP = .0000 Y/BW  
BREF = 936.6820 IN. ZMRP = .0000 Z  
SCALE = .0060

MACH = 3.700 ALPHA = -5.000  
BETA = .000 DELTAH = .175

RN/L ( 1 ) = 1.890 ALPHA ( 1 ) = -5.000 MACH = 3.700 TO = 708.000 HO = 3961.000 RN/L = 1.990

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE QDOT

X .0000

TAP NO

1.000 .5348  
2.000 .4214  
3.000 .4325  
6.000 .2881

RN/L ( 2 ) = 4.560 ALPHA ( 1 ) = -5.000 MACH = 3.700 TO = 725.000 HO = 9453.000 RN/L = 4.560

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE QDOT

X .0000

TAP NO

1.000 1.0067  
2.000 .8008  
3.000 .7963  
6.000 .5443

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IH16 0898

ORBITER CANOPY SURFACE

(OPQC11) ( 31 OCT 74 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2690.0000 SQ.FT. XMRP = 6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/BW  
 BREF = 936.6820 IN. ZMRP = .0000 Z  
 SCALE = .0060

MACH = 3.700 ALPHA = .000  
 BETA = .000

RN/L ( 1 ) = 1.910 ALPHA ( 1 ) = .000 MACH = 3.700 TO = 719.000 HO = 3921.400 RN/L = 1.910

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE QDOT

X .0000

## TAP NO

1.000 .5371  
 2.000 .4474  
 3.000 .4550  
 4.000 .3600  
 5.000 .4436  
 6.000 .3024

RN/L ( 2 ) = 4.540 ALPHA ( 1 ) = .000 MACH = 3.700 TO = 727.000 HO = 9412.600 RN/L = 4.540

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE QDOT

X .0000

## TAP NO

1.000 1.2711  
 2.000 1.0754  
 3.000 1.0104  
 4.000 .8657  
 5.000 1.0622  
 6.000 .0000

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IH18 0899

ORBITER CANOPY SURFACE

(OPOC12) ( 31 OCT 74 )

REFERENCE DATA

PARAMETRIC DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
LREF = 474.8100 IN. YMRP = .0000 Y/BW  
BREF = 936.6820 IN. ZMRP = .0000 Z  
SCALE = .0050

MACH = 3.700 ALPHA = -5.000  
BETA = .000

RN/L ( 1 ) = 1.950 ALPHA ( 1 ) = -5.000 MACH = 3.700 TO = 715.000 HO = 3953.800 RN/L = 1.950

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE QDOT

X .0000

TAP NO

1.000 .6320  
2.000 .5214  
3.000 .5238  
4.000 .4234  
5.000 .5210  
6.000 .3477

RN/L ( 2 ) = 4.560 ALPHA ( 1 ) = -5.000 MACH = 3.700 TO = 725.000 HO = 8441.100 RN/L = 4.560

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE QDOT

X .0000

TAP NO

1.000 .9208  
2.000 .7391  
3.000 .7327  
4.000 .6218  
5.000 .7658  
6.000 .4519



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IH18 089B + TS + SB ORBITER WINDSHIELD SURFACE

(QPOC13) ( 31 OCT 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/SH  
 BREF = 936.6820 IN. ZMRP = .0000 Z  
 SCALE = .0060

## PARAMETRIC DATA

MACH = 3.700 ALPHA = .000  
 BETA = .000 DELTAH = .069

RN/L ( 1 ) = 1.990 ALPHA ( 1 ) = .000 MACH = 3.700 TO = 723.000 HO = 4087.200 RN/L = 1.990

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE QDOT

X .0000

TAP NO  
 1.000 .4839  
 2.000 .3918  
 3.000 .4080  
 6.000 .2853

RN/L ( 2 ) = 4.550 ALPHA ( 1 ) = .000 MACH = 3.700 TO = 728.000 HO = 9498.400 RN/L = 4.550

SECTION ( 2 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE QDOT

X .0000

TAP NO  
 1.000 .9498  
 2.000 .7779  
 3.000 .7752  
 6.000 .5224



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IH16 089B + T8 + S6 ORBITER WINDSHIELD SURFACE

(GPQC14) ( 31 OCT 74 )

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
LREF = 474.8100 IN. YMRP = .0000 Y/BW  
BREF = 936.6820 IN. ZMRP = .0000 Z  
SCALE = .0060

PARAMETRIC DATA

MACH = 3.700 ALPHA = -5.000  
BETA = .000 DELTAH = .069

RN/L ( 1 ) = 2.000 ALPHA ( 1 ) = -5.000 MACH = 3.700 T0 = 720.000 H0 = 4102.800 RN/L = 2.000

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE QDOT

X .0000

TAP NO  
1.000 .4600  
2.000 .3494  
3.000 .3550  
6.000 .2453

RN/L ( 2 ) = 4.470 ALPHA ( 1 ) = -5.000 MACH = 3.700 T0 = 723.000 H0 = 9261.100 RN/L = 4.470

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE QDOT

X .0000

TAP NO  
1.000 .9075  
2.000 .7074  
3.000 .7063  
6.000 .4890

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IH18 0898+T8+S6+GRIT ORBITER CANOPY SURFACE

(QPOC15) ( 31 OCT 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/BH  
 BREF = 936.6820 IN. ZMRP = .0000 Z  
 SCALE = .0060

## PARAMETRIC DATA

MACH = 3.700 ALPHA = .000  
 BETA = .000 DELTAH = .175  
 GRITNO = 25.000

RN/L ( 1 ) = 1.890 ALPHA ( 1 ) = .000 MACH = 3.700 TO = 725.000 HO = 3909.300 RN/L = 1.890

## SECTION ( 1 ) ORBITER WINDSHIELD

## DEPENDENT VARIABLE QDOT

X .0000

TAP NO  
 1.000 .5484  
 2.000 .4195  
 3.000 .4221  
 6.000 .2810

RN/L ( 2 ) = 4.620 ALPHA ( 1 ) = .000 MACH = 3.700 TO = 723.000 HO = 9494.500 RN/L = 4.620

## SECTION ( 1 ) ORBITER WINDSHIELD

## DEPENDENT VARIABLE QDOT

X .0000

TAP NO  
 1.000 1.1633  
 2.000 .8858  
 3.000 .8642  
 6.000 .5848





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TABULATED DATA - IH18

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IH16 089B + ORIT

ORBITER CANOPY SURFACE

(QPQC16) ( 31 OCT 74 )

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
LREF = 474.8100 IN. YMRP = .0000 Y/BW  
BREF = 936.6820 IN. ZMRP = .0000 Z  
SCALE = .0060

PARAMETRIC DATA

HACH = 3.700 ALPHA = .000  
BETA = .000 GRITNO = 25.000

RN/L ( 1 ) = 1.910 ALPHA ( 1 ) = .000 HACH = 3.700 TO = 725.000 HO = 3959.300 RN/L = 1.910

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE QDOT

X .0000

TAP NO

1.000 .6920  
2.000 .5812  
3.000 .5605  
4.000 .4673  
5.000 .5647  
6.000 .0000

RN/L ( 2 ) = 4.570 ALPHA ( 1 ) = .000 HACH = 3.700 TO = 731.000 HO = 9553.100 RN/L = 4.570

SECTION ( 1 ) ORBITER WINDSHIELD

DEPENDENT VARIABLE QDOT

X .0000

TAP NO

1.000 1.0277  
2.000 .7802  
3.000 .7526  
4.000 .6934  
5.000 .8120  
6.000 .0000

IH18 0898 + T8 + S8 EXTERNAL TANK SURFACE

(0P0701) ( 31 OCT 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/8H  
 BREF = 938.6820 IN. ZMRP = .0000 Z  
 SCALE = .0060

## PARAMETRIC DATA

MACH = 3.700 ALPHA = .000  
 BETA = .000 DELTAH = .175

RN/L ( 1 ) = 1.930 ALPHA ( 1 ) = .000 MACH = 3.700 TO = 719.000 HO = 3958.500 RN/L = 1.930

## SECTION ( 1 ) EXTERNAL TANK

## DEPENDENT VARIABLE QDOT

PHI .0000 45.0000 87.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L

.000									.8047
.020									.6373
.060									.5269
.100									.3671
.150									.2332
.200				.1235					.1264
.250				.0765					.0363
.275				.1446	.0976				
.300			.1932	.3020	.2045				.0417
.325				.4248	.3207	.1253			
.350			.3700	.4279	.3662	.2021			.0967
.375						.2435			.2166
.400	.1214	.2927	.2831	.2762	.2796	.2721	.3309		.3743
.425									.4427
.450				.1342	.1692	.2930	.4165		.0000
.475									.3155
.500		.2228	.1352	.1119	.2140	.3585	.3622		.2695
.525									.2235
.550				.1859	.2794	.3483	.2978		.1849
.575									.2258
.600	.2311	.1825	.1885	.2380	.3048	.2882	.2944		.2793
.625									.3184
.650				.2284	.2653		.2902		.3127
.675									.2989
.700		.1451	.1878	.2124	.2491	.2411	.2532		.2855
.750				.2393			.2368		.2511
.800	.1686	.1580	.1782	.2457	.2844	.2166	.2128		.0000
.850				.2325					.1779
.900		.1777	.2199	.2828	.2730	.2113	.1588		.1380

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TABULATED DATA - IH18

IH18 0898 + T8 + S8 EXTERNAL TANK SURFACE

(QPQT01)

RN/L (R) = 4.570 ALPHA (I) = .000 MACH = 3.700 TO = 724.000 HO = 9482.500 RN/L = 4.570

SECTION (I) EXTERNAL TANK

DEPENDENT VARIABLE QDOT

PHI .0000 45.0000 87.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L								
.000								.8539
.020								.7578
.050								.6658
.100								.4978
.150								.3240
.200				.1793				.1908
.250				.1058				.0778
.275				.2018	.1405			
.300			.2877	.4428	.3005			.1225
.325				.5974	.4875	.1928		
.350			.5154	.5985	.5205	.3187		.2419
.375						.3910		.4580
.400	.1832	.3837	.3718	.3932	.3991	.4349	.5827	.6472
.425								.7207
.450				.2027	.2785	.5122	.6654	.0000
.475								.5890
.500		.3357	.2169	.1527	.3509	.5710	.8166	.5711
.525								.5395
.550				.2452	.3925	.5159	.5566	.5107
.575								.5811
.600	.3316	.3001	.2923	.3568	.4324	.4921	.5988	.5904
.625								.5648
.650				.3919	.4401		.5035	.5194
.675								.4969
.700		.3385	.3581	.3808	.4544	.4348	.4440	.4634
.750				.4074			.3940	.3932
.800	.2740	.3515	.3304	.3915	.4758	.4151	.3579	.0000
.850				.3780				.2992
.900		.3560	.3978	.4874	.4550	.3529	.2793	.2455



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TABULATED DATA - IH15

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IH16 0898 + TB + S6 EXTERNAL TANK SURFACE

(OPQT02) ( 31 OCT 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/8W  
 BREF = 936.6820 IN. ZMRP = .0000 Z  
 SCALE = .0060

## PARAMETRIC DATA

MACH = 3.700 ALPHA = -5.000  
 BETA = .000 DELTAH = .175

RN/L ( 1 ) = 1.990 ALPHA ( 1 ) = -5.000 MACH = 3.700 TO = 708.000 H0 = 3951.000 RN/L = 1.990

## SECTION ( 1 ) EXTERNAL TANK

## DEPENDENT VARIABLE QDOT

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L	PHI	QDOT	QDOT	QDOT	QDOT	QDOT	QDOT	QDOT
.000								.7103
.020								.6011
.060								.5250
.100								.3886
.150								.2582
.200			.1178					.1535
.250			.0792					.1103
.275			.1461	.1069				
.300		.1889	.2837	.2131				.0644
.325			.4069	.3375	.1496			
.350		.3090	.4076	.3840	.2520			.1225
.375					.3094			.2479
.400	.0848	.1868	.1833	.2637	.3329	.0000	.3704	.3790
.425								.4509
.450			.1428	.2322	.3398	.4228		.0000
.475								.3094
.500		.1222	.0709	.1161	.2657	.3609	.3384	.2535
.525								.2091
.550			.1795	.2843	.3106	.2689		.1687
.575								.1740
.600	.1490	.1033	.1089	.2440	.2852	.2627	.2596	.1989
.625								.2301
.650			.2385	.2667			.2544	.2418
.675								.2482
.700		.1370	.1259	.2250	.2858	.2548	.2393	.2501
.750				.2264			.2353	.2398
.800	.1770	.1874	.1718	.2232	.2739	.2508	.2302	.0000
.850				.2169				.1995
.900		.2037	.2470	.2918	.2683	.2278	.2061	.1763

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TABULATED DATA - IH16

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IH16 0899 + T8 + S6 EXTERNAL TANK SURFACE

(OPQT02)

RN/L ( 2 ) = 4.560 ALPHA ( 1 ) = -5.000 MACH = 3.700 TO = 725.000 HO = 9453.000 RN/L = 4.560

SECTION ( 1 ) EXTERNAL TANK

DEPENDENT VARIABLE QDOT

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L

.000								1.0506
.020								.8490
.060								.7482
.100								.5760
.150								.3859
.200				.1856				.2489
.250				.1225				.1822
.275				.2327	.1712			
.300		.3084		.5136	.3358			.1649
.325				.6856	.5510	.2464		
.350		.5122		.6684	.6444	.4175		.3243
.375						.5056		.5810
.400	.1615	.3433	.2976	.4331	.5169	.0000	.7192	.8108
.425								.8291
.450				.2535	.3966	.6102	.7364	.0000
.475								.6298
.500		.2351	.1318	.2618	.5020	.6243	.6364	.6137
.525								.6025
.550				.3363	.4661	.5122	.5992	.5755
.575								.6052
.600	.3287	.2228	.2026	.3800	.4433	.4849	.5981	.5937
.625								.5976
.650				.3769	.4873		.5410	.5773
.675								.5497
.700		.2998	.2403	.3570	.5087	.5025	.4951	.5209
.750				.3780			.4739	.4707
.800	.3259	.3300	.2938	.3739	.5142	.4820	.4529	.0000
.850				.3668				.4010
.900		.3328	.3693	.4883	.4901	.4095	.4011	.3696

1416 78

### EXTERNAL TANK SURFACE

(QPQY03) ( 31 OCT 74 )

### REFERENCE DATA

```

SREF = 2690.0000 SQ.FT.  XMRP = .6500 X/LB
LREF = 474.8100 IN.      YMRP = .0000 Y/BW
BREF = 936.6820 IN.      ZMRP = .0000 Z
SCALE = .0060

```

### PARAMETRIC DATA

MACH = 3.700 ALPHA = .000  
BETA = .000

RN/L ( 1 ) = 1.940 ALPHA ( 1 ) = .000 HACH = 3.700 TO = 716.000 HO = 3968.000 RN/L = 1.940

### SECTION (1) EXTERNAL TANK

## DEPENDENT VARIABLE QDOT

PHI	.0000	45.0000	67.5000	90.0000	112.5000	135.0000	157.5000	180.0000
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[illegible]



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**TABULATED DATA - IN18**

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THIS TB

EXTERNAL TANK SURFACE

(QFQT03)

RN/L ( 2 ) = 4.640 ALPHA ( 1 ) = .000 MACH = 3.100 TO = 720.000 HD = 9516.000 RN/L = 4.640

### SECTION ( 1 )EXTERNAL TANK

DEPENDENT VARIABLE QDOT

**PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000**

X/L

[illegible]

1416 TB

### EXTERNAL TANK SURFACE

(OPQTO4) ( 31 OCT 74 )

### REFERENCE DATA

```

SREF = 2690.0000 SQ.FT.  XHRP = .6500 X/LB
LREF = 474.8100 IN.      YMRP = .0000 Y/BW
BREF = 936.6820 IN.      ZMRP = .0000 Z
SCALE = .0060

```

### PARAMETRIC DATA

MACH = 3.700 ALPHA = -5.000  
BETA = .000

RN/L (1) = 1.940 ALPHA (1) = -5.000 MACH = 3.700 TO = 718.000 HO = 3970.200 RN/L = 1.940

## SECTION (1) EXTERNAL TANK

## DEPENDENT VARIABLE QDOT

PHI .0000 45.0000 57.5000 60.0000 112.5000 135.0000 157.5000 180.0000

[illegible]



DATE 08 JUN 75

TABULATED DATA - IH16

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IH16 TB EXTERNAL TANK SURFACE (QPQT04)  
RN/L ( 2 ) = 4.630 ALPHA ( 1 ) = -5.000 MACH = 3.700 TO = 724.000 HO = 9592.000 RN/L = 4.630

SECTION ( 1 ) EXTERNAL TANK DEPENDENT VARIABLE QDOT

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L

.000								.8168
.005								.6938
.010								.7289
.020								.7519
.040								.7375
.060								.6993
.080								.6224
.100								.5545
.125								.4449
.150								.3819
.175								.3314
.200			.1881					.2520
.250			.1409					.2121
.275			.1379	.1642				
.300		.1103	.1366	.1632				.1970
.325			.1322	.1554	.1780			
.350		.1089	.1342	.1546	.1791			.1763
.375					.1718			.1862
.400	.0268	.0680	.1030	.1406	.1625	.0000	.1838	.1763
.425								.1751
.450			.1321	.1527	.1695	.1900	.0000	
.475								.1780
.500		.0604	.0972	.1276	.1603	.1761	.1902	.1818
.525								.1749
.550			.1298	.1505	.1713	.1884		.1724
.575								.1741
.600	.0574	.0521	.0867	.1234	.1548	.1715	.1923	.1773
.625								.1841
.650			.0825	.1177	.1470	.1702	.1848	.1837
.675								.1832
.700		.0511	.0799	.1177	.1474	.1760	.1804	.1849
.750			.0772	.1218	.1497	.1754	.1892	.1858
.800	.1558	.0601	.0792	.1227	.1583	.1800	.1943	.0000
.850			.1219	.1547	.1805	.1897		.1955
.900		.1865	.1294	.1297	.1555	.1718	.1980	.1857
.935								.1596
.974								.1714

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DATE 06 JUN 75

TABULATED DATA - IH16

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IH16 089B + TB + S6 EXTERNAL TANK SURFACE

(OPQT13) ( 31 OCT 74 )

## REFERENCE DATA

SREF = 2590.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/BW  
 BREF = 938.8820 IN. ZMRP = .0000 Z  
 SCALE = .0080

## PARAMETRIC DATA

HACH = 3.700 ALPHA = .000  
 BETA = .000 DELTAH = .069

RN/L ( 1 ) = 1.990 ALPHA ( 1 ) = .000 HACH = 3.700 TO = 723.000 HO = 4087.200 RN/L = 1.990

## SECTION ( 1 ) EXTERNAL TANK

## DEPENDENT VARIABLE QDOT

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L

.000									.7712
.020									.6123
.060									.5008
.100									.3464
.150									.2126
.200				.1141					.1144
.250				.0650					.0319
.275				.1295	.0918				
.300			.1803	.2908	.1990				.0542
.325				.4167	.3167	.1354			
.350			.3619	.4156	.3482	.2246			.2353
.375						.2779			.4255
.400	.1155	.2874	.2596	.2537	.2612	.0000	.4236		.4815
.425									.3647
.450				.1314	.2106	.3609	.3531		.0000
.475									.1990
.500		.2272	.1389	.1212	.2447	.3561	.3061		.2227
.525									.2504
.550				.1682	.2482	.2927	.2999		.2724
.575									.2841
.600	.2170	.1562	.1454	.2105	.2565	.2503	.2782		.2834
.625									.2818
.650				.2108	.2352		.2299		.2574
.675									.2287
.700		.1398	.1572	.2162	.2503	.1958	.1879		.2074
.750				.2338			.1501		.1635
.800	.1678	.1458	.1637	.2175	.2571	.1744	.1262		.0000
.850				.2068					.1101
.900		.1664	.2046	.2560	.2385	.1808	.1156		.0973



DATE 05 JUN 75

TABULATED DATA - IH16

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IH16 0898 + T8 + S6 EXTERNAL TANK SURFACE

(QPQT13)

RN/L ( 2 ) = 4.550 ALPHA ( 1 ) = .000 MACH = 3.700 T0 = 728.000 H0 = 9488.400 RN/L = 4.550

SECTION ( 1 ) EXTERNAL TANK

DEPENDENT VARIABLE QDOT

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L

.000								1.0719
.020								.6438
.060								.7187
.100								.5233
.150								.3347
.200				.1926				.1951
.250				.0985				.0746
.275				.2064	.1469			
.300			.2759	.5162	.3168			.1295
.325				.6941	.5170	.2154		
.350			.5760	.6634	.5735	.3553		.4025
.375						.4614		.7735
.400	.0000	.4320	.3900	.4095	.4074	.0000	.7313	.8222
.425								.6342
.450				.2162	.3532	.6426	.6258	.0000
.475								.4399
.500		.3686	.2345	.2166	.4120	.5992	.5844	.5385
.525								.5720
.550				.3449	.4283	.5169	.6082	.5717
.575								.5699
.600	.3568	.3234	.3447	.4265	.4664	.4869	.5684	.5466
.625								.5293
.650				.4184	.4622		.4637	.4841
.675								.4353
.700		.3742	.3990	.4156	.4791	.3908	.3629	.4003
.750				.4117			.2973	.3295
.800	.2909	.3843	.3451	.3849	.4730	.3679	.2662	.0000
.850				.3742				.2267
.900		.3818	.3971	.4714	.4284	.3454	.3192	.2707

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TABULATED DATA - IH16

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IH16 0098 + T8 + S6 EXTERNAL TANK SURFACE

(QPOT14) ( 31 OCT 74 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/BW  
 BREF = 936.6820 IN. ZMRP = .0000 Z  
 SCALE = .0060

## PARAMETRIC DATA

MACH = 3.700 ALPHA = -5.000  
 BETA = .000 DELTAH = .069

RN/L ( 1 ) = 2.000 ALPHA ( 1 ) = -5.000 MACH = 3.700 TO = 720.000 HO = 4102.800 RN/L = 2.000

SECTION ( 1 ) EXTERNAL TANK

DEPENDENT VARIABLE QDOT

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L

.000									.6214
.020									.5467
.060									.4915
.100									.3726
.150									.2502
.200				.1189					.1530
.250				.0992					.1069
.275				.1513	.1281				
.300			.1885	.2720	.2233				.0714
.325				.3567	.3186	.1869			
.350			.2910	.3737	.3507	.2842			.2320
.375						.3335			.3568
.400	.0000	.1793	.1969	.2662	.3237	.0000	.4078		.4186
.425									.3884
.450				.1583	.2589	.3493	.3667		.0000
.475									.2400
.500		.1276	.0911	.1584	.2916	.3421	.2926		.2066
.525									.1823
.550				.2108	.2887	.2914	.2515		.1707
.575									.1728
.600	.1429	.1144	.1309	.2296	.2833	.2550	.2402		.1822
.625									.1942
.650				.2215	.2714		.2201		.1951
.675									.1932
.700		.1354	.1349	.2168	.2740	.2384	.2005		.1922
.750				.2184			.1863		.1751
.800	.1816	.1807	.1785	.2169	.2599	.2260	.1887		.0000
.850				.2195					.1591
.900		.1829	.2371	.2789	.2610	.2167	.1779		.1461



DATE 08 JUN 75

TABULATED DATA - IH18

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IH18 0899 + T8 + S8 EXTERNAL TANK SURFACE

(QPQT14)

RN/L ( 2 ) = 4.470 ALPHA ( 1 ) = -5.000 MACH = 3.700 TO = 723.000 H0 = 9281.100 RN/L = 4.470

SECTION ( 1 ) EXTERNAL TANK

DEPENDENT VARIABLE QDOT

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L									
.000									.8301
.020									.7844
.080									.7095
.100									.5509
.150									.3789
.200				.1774					.2432
.250				.1240					.1567
.275				.2399	.1777				
.300		.3122		.5004	.3500				.1599
.325				.8478	.5390	.2818			
.350		.4872		.5298	.6066	.4487			.4187
.375						.5362			.7001
.400	.1521	.3258	.2931	.4187	.4942	.0000	.7127		.7742
.425									.6472
.450				.2505	.4202	.6273	.6120		.0000
.475									.4318
.500		.2329	.1390	.2805	.5242	.6189	.5628		.4578
.525									.4768
.550				.3471	.4661	.5359	.5785		.5007
.575									.5353
.600	.3052	.2258	.2189	.3931	.5054	.5123	.5657		.5409
.625									.5442
.650				.3930	.5079		.4861		.5215
.675									.4873
.700		.3002	.2458	.3859	.5057	.4743	.4265		.4603
.750				.3942			.3819		.4056
.800	.3292	.3221	.3008	.3696	.4719	.4151	.3808		.0000
.850				.3759					.3943
.900		.3255	.3875	.4800	.4521	.3821	.4056		.4099

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TABULATED DATA - IH16

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IH16 089B+T8+S6+GRIT EXTERNAL TANK SURFACE

(QPQT15) ( 31 OCT 74 )

## REFERENCE DATA

SREF = 2590.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/BH  
 BREF = 938.6820 IN. ZMRP = .0000 Z  
 SCALE = .0050

## PARAMETRIC DATA

MACH = 3.700 ALPHA = .000  
 BETA = .000 DELTAH = .175  
 GRITNO = 25.000

RN/L ( 1 ) = 1.890 ALPHA ( 1 ) = .000 MACH = 3.700 TO = 725.000 HD = 3909.300 RN/L = 1.890

## SECTION ( 1 ) EXTERNAL TANK

## DEPENDENT VARIABLE COOT

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L

.000								.7607
.020								.6360
.060								.5308
.100								.4580
.150								.3397
.200				.1768				.1797
.250				.1294				.1021
.275				.2079	.1499			
.300		.3085		.3684	.2450			.0640
.325				.4813	.3688	.1719		
.350		.4551		.4945	.3707	.2689		.1734
.375						.3088		.3326
.400	.0000	.2848	.2759	.2935	.3062	.0000	.4441	.4465
.425								.4823
.450				.1415	.2213	.3553	.4693	.0000
.475								.4212
.500		.1996	.1182	.1199	.2748	.3735	.3986	.3727
.525								.3231
.550				.1683	.2698	.3227	.3388	.3084
.575								.3460
.600	.1908	.1599	.1557	.2236	.2680	.2944	.3579	.3547
.625								.3448
.650				.2324	.2389		.2889	.3123
.675								.2892
.700		.1592	.1687	.2347	.2370	.2283	.2527	.2668
.750				.2802			.2182	.2215
.800	.1394	.1835	.1879	.2591	.2675	.1843	.1884	.0000
.850				.2482				.1515
.900		.2073	.2475	.2904	.2431	.1757	.1373	.1261



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TABULATED DATA - IH16

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IH16 089B+T8+S6+GRIT EXTERNAL TANK SURFACE

(OPQT15)

RN/L ( 2 ) = 4.620 ALPHA ( 1 ) = .000 MACH = 3.700 TO = 723.000 H0 = 9494.500 RN/L = 4.620

SECTION ( 1 ) EXTERNAL TANK

DEPENDENT VARIABLE QDOT

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L

.000								1.1159
.020								.8551
.060								.7239
.100								.6897
.150								.6089
.200				.3280				.3525
.250				.2523				.2460
.275				.3759	.2761			
.300		.5622		.7126	.4236			.2571
.325				.8373	.5979	.3290		
.350		.7511		.7868	.6293	.4607		.3436
.375						.4683		.5909
.400	.0000	.4595	.4152	.4696	.4872	.0000	.7097	.7676
.425								.7648
.450				.2432	.3494	.5773	.7106	.0000
.475								.6522
.500		.3264	.2054	.2049	.4697	.6416	.6279	.6024
.525								.6094
.550				.2830	.4592	.5524	.6575	.6534
.575								.6246
.600	.3303	.2991	.3079	.3835	.4660	.5198	.6031	.5918
.625								.5922
.650				.4405	.4743		.5290	.5628
.675								.5115
.700		.3759	.3822	.4892	.4793	.4031	.4503	.4793
.750				.5136			.3970	.4206
.800	.2838	.3859	.3360	.4768	.4915	.3827	.3714	.0000
.850				.4493				.3361
.900		.3785	.4555	.5355	.4269	.3306	.2904	.2848

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TABULATED DATA - 1H16

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1416 TB + GRIT

### EXTERNAL TANK SURFACE

(QPQT18) 1 31 OCT 74 1

## REFERENCE DATA

```

SREF = 2690.0000 SQ.FT.  XMRP = .6500 X/LB
LREF = 474.8100 IN.      YMRP = .0000 Y/BW
BREF = 936.6820 IN.      ZMRP = .0000 Z
SCALE = .0080

```

### PARAMETRIC DATA

HACH	=	3.700	ALPHA	=	.000
BETA	=	.000	GRITNO	=	25.000

RN/L (1) = 1.940    ALPHA (1) = .000    MACH = 3.700    TO = 723.000    HD = 3981.600    RN/L = 1.940

## SECTION (1) EXTERNAL TANK

## DEPENDENT VARIABLE QDOT

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L

[illegible]

DATE 08 JUN 75

**TABULATED DATA - IH16**

PAGE 199

**INIB T8 + GRIT**

EXTERNAL TANK SURFACE

(OPOT18)

RN/L ( 2 ) = 4.580    ALPHA ( 1 ) = .000    MACH = 3.700    TO = 729.000    HD = 9574.600    RN/L = 4.580

SECTION (1) EXTERNAL TANK

DEPENDENT VARIABLE QDOT

PHI .0000 45.0000 67.5000 90.0000 112.5000 135.0000 157.5000 180.0000

X/L

[illegible]

DATE 08 JUN 75

TABULATED DATA - IH16

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IH16 0898 + TB + S5 SOLID ROCKET BOOSTER SURFACE

(OPQ501) ( 31 OCT 74 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2590.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/BW  
 BREF = 938.8920 IN. ZMRP = .0000 Z  
 SCALE = .0050

MACH = 3.700 ALPHA = .000  
 BETA = .000 DELTAH = .178

RN/L ( 1 ) = 1.930 ALPHA ( 1 ) = .000 MACH = 3.700 TD = 719.000 HD = 3958.500 RN/L = 1.930

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE QDOT

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000			.8082	.8082	
.004				.7521	
.025				.7003	
.050			.0000	.6001	
.100			.3654	.4205	
.112				.4335	
.150				.3405	
.200			.2142	.2599	.1828
.300				.2247	.2077
.400	.1171		.0000	.0891	.2746 .1488
.500				.3398	
.600			.3038	.3280	.2104 .2038
.650			.2785	.3379	
.700	.2145	.2735	.2889	.3180	.2848
.750		.3650	.3646	.4113	
.800	.3974	.4760	.4995	.4938	.4696 .3047
.920	.3298	.3954	.4468	.3131	.2226 .2039
.950			.4210		.2426
1.000	.3611	.0000	.4458	.2818	.2017 .0000

RN/L ( 2 ) = 4.570 ALPHA ( 1 ) = .000 MACH = 3.700 TD = 724.000 HD = 3482.500 RN/L = 4.570

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE QDOT

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000			.8519	.8519	
.004				.8804	
.025				.7862	
.050			.0000	.7077	
.100			.4813	.5501	
.112				.5752	
.150				.4792	
.200			.3784	.4187	.3683 2703
.300				.2953	.2158
.400	.2184		.0000	.1309	.3946 .2205
.500					.4980





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TABULATED DATA - IH18

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IH18 0898 + Y8 + S8 SOLID ROCKET BOOSTER SURFACE

(OPQS01)

RN/L ( 2 ) = 4.670 ALPHA ( 1 ) = .000

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE QDOT

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L						
.600			.5578	.5052	.3207	.3580
.650			.5132	.5377		
.700	.4016	.5240	.5040	.5168	.4588	
.750		.6232	.5901	.6281		
.800	.6727	.6724	.6741	.6722	.6885	.4855
.920	.4732	.5481	.6215	.4651	.3645	.3288
.950			.6849		.3984	
1.000	.6230	.0000	.6245	.4407	.3245	.0000

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TABULATED DATA - IH16

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IH16 0898 + T8 + S8 SOLID ROCKET BOOSTER SURFACE

(OPQ502) ( 31 OCT 74 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2690.0000 SQ.FT. XIRP = .6500 X/LB  
 LREF = 474.8100 IN. YIRP = .0000 Y/8H  
 BREF = 936.6820 IN. ZIRP = .0000 Z  
 SCALE = .0060

MACH = 3.700 ALPHA = -5.000  
 BETA = .000 DELTAH = .175

RN/L ( 1 ) = 1.990 ALPHA ( 1 ) = -5.000 MACH = 3.700 TO = 708.000 HQ = 3961.000 RN/L = 1.990

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE QDOT

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000			.7285	.7285	
.004				.7067	
.025				.6587	
.050			.0000	.5669	
.100			.4053	.4150	
.112				.4185	
.150				.3437	
.200			.2598	.3148	.1319
.300				.2483	.1699
.400	.1359		.0000	.1155	.2776 .1197
.500				.3511	
.600			.2986	.2808	.1879 .1823
.650			.2556	.2788	
.700	.1114	.2170	.2367	.2583	.2539
.750		.2741	.3175	.3685	
.800	.1908	.3773	.4537	.4821	.4793 .2902
.920	.1754	.2897	.3788	.3053	.2355 .2109
.950			.3485		.2507
1.000	.2327	.0000	.3837	.2821	.2169 .0000

RN/L ( 2 ) = 4.580 ALPHA ( 1 ) = -5.000 MACH = 3.700 TO = 725.000 HQ = 5453.000 RN/L = 4.560

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE QDOT

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000			1.0288	1.0288	
.004				.9348	
.025				.8931	
.050			.0000	.7716	
.100			.5794	.5792	
.112				.6131	
.150				.5041	
.200			.4338	.5098	.4188 .1855
.300				.4233	.2526
.400	.2899		.0000	.1940	.4646 .2233
.500					.6477



DATE 06 JUN 75

TABULATED DATA - IH16

IH16 0898 + TB + S6 SOLID ROCKET BOOSTER SURFACE

(QP0502)

RN/L ( 2 ) = 4.560 ALPHA ( 1 ) = -5.000

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE QDOT

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L						
.600			.5505	.5700	.3715	.3470
.650			.4981	.5930		
.700	.2085	.4104	.5018	.5669	.4986	
.750		.5099	.5816	.6577		
.800	.3491	.6093	.7050	.7180	.7053	.4472
.820	.3087	.4780	.6169	.4767	.3921	.3764
.950			.5784		.4313	
1.000	.4113	.0000	.6096	.4397	.3793	.0000

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IH16 S6

SOLID ROCKET BOOSTER SURFACE

(OPQS05) ( 31 OCT 74 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/BW  
 BREF = 936.6820 IN. ZMRP = .0000 Z  
 SCALE = .0050

MACH = 3.700 ALPHA = .000  
 BETA = .000

RN/L ( 1 ) = 1.930 ALPHA ( 1 ) = .000 MACH = 3.700 TO = 722.000 HO = 3959.500 RN/L = 1.930

SECTION ( 1 ) SOLID ROCKET BOSTR

DEPENDENT VARIABLE QDOT

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000		.8334			
.004			.7702		
.025			.7249		
.050		.0000	.6005		
.100		.3572	.3762		
.112			.3468		
.150			.1486		
.200		.1349	.1332	.1381	.0899
.300			.1082	.1094	
.400	.0701	.0000	.1011	.0991	.0814
.500			.1167		
.600		.0795	.0779	.0611	.0687
.650		.0572	.0670		
.700	.0191	.0342	.0340	.0420	.0444
.750		.0240	.0215	.0355	
.800	.0243	.0325	.0348	.0417	.0430
.820	.0720	.0751	.0912	.0909	.0989
.950		.2064	.1627		
1.000	.2551	.0000	.3148	.2802	.2648

RN/L ( 2 ) = 4.620 ALPHA ( 1 ) = .000 MACH = 3.700 TO = 725.000 HO = 9573.800 RN/L = 4.620

SECTION ( 1 ) SOLID ROCKET BOSTR

DEPENDENT VARIABLE QDOT

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000		.9550			
.004			.9359		
.025			.8618		
.050		.0000	.7315		
.100		.4873	.5087		
.112			.4734		
.150			.2146		
.200		.2017	.2003	.2074	.1339
.300			.1669	.1663	
.400	.1099	.0000	.1568	.1536	.1109
.500			.1758		

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IH16 SS

SOLID ROCKET BOOSTER SURFACE

(QPQ505)

RN/L ( 2 ) = 4.620 ALPHA ( 1 ) = .000

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE QDOT

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.600			.1262	.1297	.1009	.1166
.650			.0973	.1190		
.700	.0597	.0744	.0687	.0799	.0840	
.750		.1554	.1405	.1669		
.800	.2410	.2458	.2443	.2562	.2828	.2455
.920	.5393	.5521	.6574	.6473	.7057	.6392
.950			.8265		.8114	
1.000	.6258	.0000	.7782	.7251	.7271	.0000

IH16 SB

SOLID ROCKET BOOSTER SURFACE

(000505) ( 31 OCT 74 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2620.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/BW  
 BREF = 936.6820 IN. ZMRP = .0000 Z  
 SCALE = .0060

MACH = 3.700 ALPHA = -5.000  
 BETA = .000

RN/L ( 1 ) = 1.930 ALPHA ( 1 ) = -5.000 MACH = 3.700 TO = 721.000 HO = 3957.600 RN/L = 1.930

## SECTION ( 1 ) SOLID ROCKET BOOSTER

## DEPENDENT VARIABLE QDOT

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000		.6547			
.004				.7605	
.025				.7337	
.050		.0000		.6117	
.100		.4400		.4007	
.112				.3634	
.150				.1568	
.200		.2137	.1957	.1605	.0786
.300			.1995	.1418	
.400	.1239	.0000	.2089	.1476	.0548
.500				.1759	
.600		.2158	.1792	.0834	.0684
.650		.1992	.1876		
.700	.0787	.1759	.1644	.1588	.0976
.750		.2181	.2295	.2021	
.800	.1729	.2839	.3087	.2692	.1725
.820	.2700	.3555	.4808	.4341	.2927
.850			.6878	.4817	
1.000	.4333	.0000	.6034	.5252	.4840

RN/L ( 2 ) = 4.800 ALPHA ( 1 ) = -5.000 MACH = 3.700 TO = 726.000 HO = 9545.300 RN/L = 4.800

## SECTION ( 1 ) SOLID ROCKET BOOSTER

## DEPENDENT VARIABLE QDOT

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000		1.1888			
.004				.9934	
.025				.8959	
.050		.0000		.8164	
.100		.6391		.5689	
.112				.5299	
.150				.2324	
.200		.3208	.2899	.2357	.1141
.300			.2984	.2160	
.400	.1806	.0000	.3150	.2208	.1029
.500				.2548	





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TABULATED DATA - IH16

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IH16 S6

SOLID ROCKET BOOSTER SURFACE

(OPQ505)

RN/L ( 2 ) = 4.600 ALPHA ( 1 ) = -5.000

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE QDOT

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.600			.3218	.2795	.1299	.1590
.650			.3034	.2901		
.700	.1278	.2591	.2723	.2371	.1659	
.750		.4328	.4654	.4056		
.800	.3884	.5688	.6308	.5363	.4494	.4139
.920	.6301	.7159	.8707	.8281	.8095	.6069
.950			.9762		.8686	
1.000	.7300	.0000	.9336	.8460	.7673	.0000

DATE 06 JUN 75

TABULATED DATA - IH16

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IH16 SS

SOLID ROCKET BOOSTER SURFACE

(QP0507) ( 31 OCT 74 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2890.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/BH  
 BREF = 936.6820 IN. ZMRP = .0000 Z  
 SCALE = .0060

MACH = 3.700 ALPHA = 20.000  
 BETA = .000

RN/L ( 1 ) = 4.570 ALPHA ( 1 ) = 20.000 MACH = 3.700 TO = 729.000 HO = 9545.900 RN/L = 4.570

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE QDOT

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.000		.9381			
.004			.9132		
.025			.7907		
.050		.0000	.7165		
.100		.5670	.7104		
.112			.7503		
.130			.5320		
.200		.3438	.4825	.5828	.3600
.300			.4644	.5468	
.400	.2273	.0000	.5095	.5612	.4066
.500				.6582	
.600		.3277	.4586	.4080	.4689
.650		.3208	.4695		
.700	.3029	.3386	.3407	.5008	.6155
.750		.4481	.4803	.7104	
.800	.5606	.5357	.6349	.7889	.8808
.920	.5065	.5259	.7631	.7929	.8464
.950			.7893	.8575	
1.000	.5814	.0000	.7303	.7974	.8351



DATE 06 JUN 75

TABULATED DATA - IH18

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IH18 S6

SOLID ROCKET BOOSTER SURFACE

(OPQ508) ( 31 OCT 74 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF \* 2690.0000 SQ.FT. XHRP = .6500 X/LB  
 LREF \* 474.8100 IN. YHRP = .0000 Y/BW  
 BREF \* 938.6820 IN. ZHRP = .0000 Z  
 SCALE = .0060

MACH = 3.700 ALPHA = 45.000  
 BETA = .000

RN/L ( 1 ) = 4.540 ALPHA ( 1 ) = 45.000 MACH = 3.700 TO = 730.000 HO = 9498.400 RN/L = 4.540

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE QDOT

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000			.8634		
.004				.9802	
.025				.6473	
.050		.0000		.5741	
.100		.6020		.6865	
.112				.7853	
.150				.6783	
.200		.5308	.7278	.8269	.5410
.300			.7099	.7806	
.400	.1737	.0000	.7478	.7526	.5919
.500				.7996	
.600		.4810	.6436	.5059	.6602
.650		.4562	.6951		
.700	.2254	.3345	.4862	.6944	.7605
.750		.5265	.6153	.7689	
.800	.4322	.5480	.7296	.7422	.5969
.920	.3180	.3651	.6718	.7268	.6511
.950			.7501	.6819	
1.000	.4862	.6000	.7133	.7610	.7239
					.0000

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TABULATED DATA - IH16

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IH16 S6

SOLID ROCKET BOOSTER SURFACE

(OPQS09) ( 31 OCT 74 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/BN  
 BREF = 936.6820 IN. ZMRP = .0000 Z  
 SCALE = .0050

HACH = 3.700 ALPHA = 70.000  
 BETA = .000

RN/L ( 1 ) = 4.560 ALPHA ( 1 ) = 70.000 HACH = 3.700 YD = 728.000 HO = 9517.400 RN/L = 4.560

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE QDOT

PHI. 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.000			.7930		
.004				.7640	
.025				.5328	
.050		.0000		.4548	
.100		.5679		.5666	
.112				.6412	
.150				.5718	
.200		.6311	.7216	.7385	.5215
.300			.7243	.7026	
.400	.1776	.0000	.7585	.6895	.5873
.500				.6928	
.600		.5957	.6626	.4516	.6420
.650		.5522	.7171		
.700	.2201	.3628	.5654	.7029	.6890
.750		.4329	.5664	.7352	
.800	.3918	.4910	.6645	.6828	.5531
.920	.2793	.3115	.5645	.6735	.6715
.950			.5903	.7584	
1.000	.3220	.0000	.5472	.6813	.7349



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TABULATED DATA - IH16

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IH16 S6

SOLID ROCKET BOOSTER SURFACE

(OPQS10) ( 31 OCT 74 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/BW  
 BREF = 936.6820 IN. ZMRP = .0000 Z  
 SCALE = .0060

HACH = 3.700 ALPHA = 90.000  
 BETA = .000

RN/L ( 1 ) = 4.540 ALPHA ( 1 ) = 90.000 HACH = 3.700 TO = 731.000 HO = 9526.900 RN/L = 4.540

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE QDOT

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000			.8389		
.004				.7846	
.025				.5718	
.050		.0000		.4858	
.100		.5625		.6100	
.112				.8541	
.150				.6434	
.200		.6627	.7557	.7899	.5484
.300			.7701	.7553	
.400	.1787	.0000	.8166	.7450	.6339
.500				.7381	
.600		.6216	.7085	.4803	.6960
.650		.5890	.7720		
.700	.2168	.3585	.6043	.7512	.7342
.750		.4384	.5836	.7603	
.800	.3821	.4700	.6604	.7881	.7857
.920	.2478	.3268	.6853	.7215	.7870
.950			.6830		.6321
1.000	.3404	.0000	.6602	.6121	.7042
					.0000

ORIGINAL PAGE IS  
 OF POOR QUALITY

IH18 089B + T8 + S6 SOLID ROCKET BOOSTER SURFACE

(090513) ( 31 OCT 74 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/BW  
 BREF = 938.6820 IN. ZMRP = .0000 Z  
 SCALE = .0060

MACH = 3.700 ALPHA = .000  
 BETA = .000 DELTAH = .059

RN/L ( 1 ) = 1.990 ALPHA ( 1 ) = .000 MACH = 3.700 TO = 723.000 HO = 4087.200 RN/L = 1.990

## SECTION ( 1 ) SOLID ROCKET BOOSTER

## DEPENDENT VARIABLE QDOT

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

## X/L

.000			.8152	.8152	
.004				.7736	
.025				.7165	
.050		.0000		.6082	
.100		.3561		.4324	
.112				.4380	
.150				.3539	
.200		.2044	.2533	.2755	.1890
.300			.2217	.2085	
.400	.1157	.0000	.3429	.3061	.1575
.500				.3548	
.600		.3027	.3035	.2013	.2027
.650		.2663	.3089		
.700	.2107	.2622	.2432	.2748	.2510
.750		.3408	.3303	.3605	
.800	.4054	.4609	.4734	.4651	.3025
.920	.3225	.3731	.4211	.3166	.2452
.850			.4740	.2681	
1.000	.3437	.0000	.4172	.2960	.2307

RN/L ( 2 ) = 4.550 ALPHA ( 1 ) = .000 MACH = 3.700 TO = 729.000 HO = 9498.400 RN/L = 4.350

## SECTION ( 1 ) SOLID ROCKET BOOSTER

## DEPENDENT VARIABLE QDOT

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

## X/L

.000		1.0707	1.0707		
.004			.9842		
.025			.9332		
.050		.0000	.8083		
.100		.5286	.6134		
.112			.6952		
.150			.5841		
.200		.3559	.4477	.4275	.2918
.300			.3379	.2862	
.400	.2285	.0000	.5543	.4879	.2736
.500				.5023	





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TABULATED DATA - IH16

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IH16 089B + T8 + 56 SOLID ROCKET BOOSTER SURFACE

(QPQS13)

RN/L : 21 = 4.550 ALPHA ( 1 ) = .000

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE QDOT

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L						
.800			.5388	.5234	.3510	.3738
.650			.5031	.5475		
.700	.4462	.5500	.4818	.5089	.4699	
.750		.6493	.5986	.6255		
.800	.6381	.7250	.7145	.6985	.7456	.5307
.920	.5343	.6088	.6847	.5480	.4517	.3879
.950			.7560		.4732	
1.000	.5755	.0000	.6772	.5266	.4239	.0000

ORIGINAL PAGE IS  
OF POOR QUALITY

IH16 089B + TB + SB SOLID ROCKET BOOSTER SURFACE

(0P0514) ( 31 OCT 74 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2890.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.6100 IN. YMRP = .0000 Y/BW  
 BREF = 936 SB20 IN. ZMRP = .0000 Z  
 SCALE = .0060

MACH = 3.700 ALPHA = -5.000  
 BETA = .000 DELTAH = .069

RN/L ( 1 ) = 2.000 ALPHA ( 1 ) = -5.000 MACH = 3.700 TO = 720.000 HO = 4102.800 RN/L = 2.000

SECTION ( 1 ) SOLID ROCKET BOSTR

DEPENDENT VARIABLE QDOT

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000		.6593		.6593	
.004				.6455	
.025				.5788	
.050		.0000		.5223	
.100		.3830		.3942	
.112				.3897	
.150				.3169	
.200		.2503	.2862	.2874	.1473
.300			.2587	.1958	
.400	.1475	.0000	.3859	.2955	.1515
.500				.3397	
.600		.2894	.2709	.1877	.1832
.650			.2473	.2671	
.700	.1192	.2198	.2289	.2505	.2514
.750		.2987	.3412	.3844	
.800	.2121	.3737	.4496	.4770	.4620 .3023
.920	.1854	.2534	.3312	.2878	.2551 .2182
.950			.3586	.2754	
1.000	.2140	.0000	.3274	.2641	.2545 .0000

RN/L ( 2 ) = 4.470 ALPHA ( 1 ) = -5.000 MACH = 3.700 TO = 723.000 HO = 9261.100 RN/L = 4.470

SECTION ( 1 ) SOLID ROCKET BOSTR

DEPENDENT VARIABLE QDOT

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000		.9242		.9242	
.004				.8817	
.025				.8311	
.050		.0000		.7360	
.100		.5662		.5745	
.112				.6062	
.150				.5314	
.200		.3972	.4829	.4326	.2090
.300			.4226	.2722	
.400	.2625	.0000	.5826	.4338	.2308
.500				.5649	

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TABULATED DATA - IH16

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IH16 0899 + TB + S6 SOLID ROCKET BOOSTER SURFACE

(QPOS14)

RN/L ( 2 ) = 4.470 ALPHA ( 1 ) = -5.000

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE QDOT

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.600			.5116	.5220	.3393	.3322
.650			.4722	.5572		
.700	.2020	.3871	.4621	.5191	.4768	
.750		.5014	.5751	.6277		
.800	.3639	.6165	.6924	.6957	.7061	.4780
.920	.2870	.4191	.5409	.4520	.4221	.3875
.950			.5980		.4735	
1.000	.3870	.0000	.5279	.4435	.4627	.0000



IH16 0899+T8+S6+GR1T SRB

(OPQS15) ( 31 OCT 74 )

## REFERENCE DATA

SREF = 2890.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/BH  
 BREF = 936.6820 IN. ZMRP = .0000 Z  
 SCALE = .0050

## PARAMETRIC DATA

MACH = 3.700 ALPHA = .000  
 BETA = .000 DELTAH = .175  
 GRITND = 25.000

RN/L ( 1 ) = 1.890 ALPHA ( 1 ) = .000 MACH = 3.700 TO = 725.000 HD = 3909.300 RN/L = 1.890

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE QDOT

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000			.7748		.7748
.004					.7665
.025					.6890
.050			.0000		.6029
.100			.4129		.4568
.112					.4621
.150					.3599
.200			.2654	.2844	.2939
.300				.2151	.1811
.400	.2019		.0000	.3344	.3059
.500					.3594
.600			.2883	.2916	.2061
.650			.2489	.2823	.2180
.700	.1900	.2228	.8171	.2855	.2320
.750		.2373	.2878	.3684	
.800	.2919	.3272	.4037	.4878	.4951
.820	.3391	.4284	.4876	.3754	.2820
.850			.5324		.2946
1.000	.3542	.0000	.4674	.3274	.2436

RN/L ( 2 ) = 4.620 ALPHA ( 1 ) = .000 MACH = 3.700 TO = 723.000 HD = 8484.500 RN/L = 4.620

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE QDOT

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000			1.1380		1.1380
.004					.9951
.025					.9581
.050			.0000		.8202
.100			.6692		.7095
.112					.6908
.150					.6438
.200			.4791	.4583	.4392
.300				.3159	.2055
.400	.3921		.0000	.4653	.4358
.500					.6176

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IH16 0898+TB+90+GRIT SRB

(QP0515)

RN/L (2) = 4.820 ALPHA (1) = .000

SECTION (1) SOLID ROCKET BOOSTER DEPENDENT VARIABLE QDOT

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L						
.600			.6257	.0020	.3733	.3814
.650			.5620	.6234		
.700	.3872	.5393	.5338	.5726	.5015	
.750		.6429	.6296	.5818		
.800	.5786	.6884	.6981	.7164	.7794	.5551
.920	.5317	.6217	.7341	.5818	.4722	.4107
.950			.8154		.4743	
1.000	.5972	.0000	.7400	.5424	.4727	.0000

IH16 SS + GRIT

SOLID ROCKET BOOSTER SURFACE

(0PQS17) ( 31 OCT 74 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2690.0000 SQ.FT. XMRP = .8500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/LB  
 BREF = 936.6820 IN. ZMRP = .0000 Z  
 SCALE = .0060

MACH = 3.700 ALPHA = .000  
 BETA = .000 GRITNO = 25.000

RN/L ( 1 ) = 1.930 ALPHA ( 1 ) = .000 MACH = 3.700 TO = 734.000 HD = 4051.600 RN/L = 1.930

## SECTION ( 1 ) SOLID ROCKET BOOSTER

## DEPENDENT VARIABLE QDOT

PHI 80.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000		.8240			
.004			.7578		
.025			.7188		
.050		.0000	.6082		
.100		.4282	.4556		
.112			.4473		
.150			.2259		
.200		.2081	.2251	.2335	.1459
.300			.2295	.2143	
.400	.1807	.0000	.2660	.2294	.1486
.500			.2958		
.600		.2774	.2579	.1917	.2261
.650		.2578	.2804		
.700	.2303	.2891	.2527	.2702	.3022
.750		.3740	.3373	.3505	
.800	.4124	.4555	.4268	.4265	.4048
.920	.2960	.3144	.3756	.3712	.4162
.950			.4689	.4682	
1.000	.3642	.0000	.4557	.4019	.4154

RN/L ( 2 ) = 4.540 ALPHA ( 1 ) = .000 MACH = 3.700 TO = 732.000 HD = 9527.900 RN/L = 4.540

## SECTION ( 1 ) SOLID ROCKET BOOSTER

## DEPENDENT VARIABLE QDOT

PHI 80.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000		.9158			
.004			.8965		
.025			.8237		
.050		.0000	.7208		
.100		.5844	.6148		
.112			.6423		
.150			.3757		
.200		.3693	.3734	.3897	.2481
.300			.4193	.4174	
.400	.3708	.0000	.4931	.4652	.3554
.500				.5469	



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IH16 S6 + GRIT

SOLID ROCKET BOOSTER SURFACE

(QP0517)

RN/L ( 2 ) = 4.540 ALPHA ( 1 ) = .000

SECTION ( 1 ) SOLID ROCKET BOOSTER

DEPENDENT VARIABLE QDOT

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.600			.4391	.4167	.3180	.4113
.650			.4070	.4446		
.700	.3767	.4559	.4021	.4303	.4676	
.750		.5562	.4957	.5197		
.800	.5643	.6209	.5947	.5879	.6323	.5187
.920	.4227	.4454	.5388	.5359	.5860	.5295
.950			.6387		.6400	
1.000	.4975	.0000	.6141	.5504	.5733	.0000

IH16 SB

SOLID ROCKET BOOSTER SURFACE

(OPQ55A) ( 31 OCT 74 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/BH  
 BREF = 936.6820 IN. ZMRP = .0000 Z  
 SCALE = .0060

MACH = 3.700 RN/L = 5.000  
 BETA = .000

RN/L ( 1 ) = 4.540 ALPHA ( 1 ) = 45.000 MACH = 3.700 TO = 730.000 HD = 9498.400 RN/L = 4.540

## SECTION ( 1 ) SOLID ROCKET BOOSTER

## DEPENDENT VARIABLE QDOT

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000		.8634			
.004			.8802		
.025			.6473		
.050		.0000	.5741		
.100		.6020	.6865		
.112			.7853		
.150			.6783		
.200		.5308	.7278	.8269	.5410
.300			.7099	.7806	
.400	.1737	.0000	.7476	.7526	.5919
.500				.7996	
.600		.4810	.6436	.5059	.6602
.650		.4562	.6951		
.700	.2254	.3345	.4862	.6944	.7605
.750		.5265	.6153	.7689	
.800	.4322	.5480	.7296	.7422	.5969
.920	.3180	.3651	.6718	.7268	.6511
.950			.7501	.6819	.6853
1.000	.4962	.0000	.7133	.7610	.7239

RN/L ( 2 ) = 4.540 ALPHA ( 1 ) = 90.000 MACH = 3.700 TO = 731.000 HD = 9526.900 RN/L = 4.540

## SECTION ( 1 ) SOLID ROCKET BOOSTER

## DEPENDENT VARIABLE QDOT

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000		.8389			
.004			.7646		
.025			.5718		
.050		.0000	.4856		
.100		.5625	.6100		
.112			.6541		
.150			.6434		
.200		.6627	.7557	.7889	.5484
.300			.7701	.7553	
.400	.1787	.0000	.8168	.7450	.6339
.500				.7281	



DATE 06 JUN 75

TABULATED DATA - IH16

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IH16 S6

SOLID ROCKET BOOSTER SURFACE

(QPQS5A)

RN/L ( 2 ) = 4.540 ALPHA ( 1 ) = 90.000

SECTION ( 1 ) SOLID ROCKET BOOSTER DEPENDENT VARIABLE QDOT

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.600			.6216	.7085	.4803	.6960
.650			.5890	.7720		
.700	.2168	.3585	.6043	.7512	.7342	
.750		.4364	.5836	.7603		
.800	.3821	.4700	.6604	.7881	.7857	.6835
.920	.2476	.3268	.5853	.7215	.7870	.7360
.950			.6830		.8321	
1.000	.3404	.0000	.6602	.6121	.7042	.0000

RN/L ( 3 ) = 4.560 ALPHA ( 1 ) = 70.000 MACH = 3.700 TO = 728.000 HQ = 9517.400 RN/L = 4.560

SECTION ( 1 ) SOLID ROCKET BOOSTER DEPENDENT VARIABLE QDOT

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L

.000			.7930			
.004					.7540	
.025					.5328	
.050			.0000		.4548	
.100			.5679		.5666	
.112					.6412	
.150					.5718	
.200			.6311	.7216	.7395	.5215
.300				.7243	.7026	
.400	.1778		.0000	.7585	.6895	.5870
.500					.6928	
.600			.5957	.6626	.4516	.6420
.650			.5522	.7171		
.700	.2201	.3828	.5654	.7029	.6890	
.750		.4329	.5664	.7352		
.800	.3918	.4810	.6645	.6628	.6531	.5483
.920	.2793	.3115	.5645	.6735	.8715	.8701
.950			.6803		.7884	
1.000	.3220	.0000	.6472	.6813	.7349	.0000



DATE 08 JUN 75

TABULATED DATA - IH16

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IH16 SB

SOLID ROCKET BOOSTER SURFACE

(OPQ55A)

RN/L ( 4 ) = 4.570 ALPHA ( 1 ) = 20.000 MACH = 3.700 TO = 729.000 HO = 9545.900 RN/L = 4.570

SECTION ( 1 ) SOLID ROCKET BOOSTER DEPENDENT VARIABLE QDOT

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000		.9381		.9132	
.004				.7907	
.025				.7165	
.050		.0000		.7104	
.100		.5670		.7503	
.112				.5320	
.150				.5828	.3600
.200		.3439	.4825	.5468	
.300			.4644	.5612	.4066
.400	.2273	.0000	.5095	.6592	
.500				.4080	.4889
.600		.3277	.4586		
.650		.3208	.4895		
.700	.3029	.3396	.3407	.5008	.6155
.750		.4481	.4803	.7104	
.800	.5603	.6357	.6349	.7889	.8808
.820	.5065	.5259	.7631	.7929	.8484
.850			.7893	.8575	
.950			.7303	.7974	.8351
1.000	.5814	.0000			.0000

RN/L ( 5 ) = 4.600 ALPHA ( 1 ) = -5.000 MACH = 3.700 TO = 728.000 HO = 9545.300 RN/L = 4.600

SECTION ( 1 ) SOLID ROCKET BOOSTER DEPENDENT VARIABLE QDOT

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L					
.000		1.1898		.9934	
.004				.9959	
.025				.8164	
.050		.0000		.5689	
.100		.6391		.5299	
.112				.2324	
.150				.2357	.1141
.200		.3208	.2899	.2160	
.300			.2984	.2208	.1029
.400	.1808	.0000	.3150	.2643	
.500				.1299	.1590
.600		.3218	.2795		
.650		.3034	.2901		
.700	.1279	.2591	.2723	.2371	.1659
.750		.4328	.4654	.4056	
.800	.3884	.6688	.6308	.5363	.4484
.820	.6301	.7159	.6707	.6281	.6095
.850			.6762	.6686	.6069

DATE 06 JUN 75

TABULATED DATA - IH16

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IH16 S6

SOLID ROCKET BOOSTER SURFACE

(QPOS5A)

RN/L ( 6 ) = 4.800 ALPHA ( 1 ) = -5.000

SECTION ( 1 ) SOLID ROCKET BOOSTER DEPENDENT VARIABLE QDOT

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L  
1.000 .7300 .0000 .9338 .8450 .7673 .0000

RN/L ( 6 ) = 4.820 ALPHA ( 1 ) = .000 MACH = 3.700 TO = 725.000 HO = 8573.800 RN/L = 4.820

SECTION ( 1 ) SOLID ROCKET BOOSTER DEPENDENT VARIABLE QDOT

PHI 90.0000135.0000180.0000225.0000270.0000315.0000

X/L						
.000			.9530			
.004				.9359		
.025				.8618		
.050			.0000	.7315		
.100			.4875	.5057		
.112				.4734		
.150				.2146		
.200			.2017	.2803	.2074	.1339
.300				.1669	.1653	
.400	.1099		.0000	.1569	.1536	.1109
.500				.1758		
.600			.1262	.1297	.1009	.1166
.650			.0973	.1190		
.700	.0597	.0744	.0697	.0799	.0840	
.750		.1554	.1405	.1669		
.800	.2410	.2458	.2443	.2562	.2828	.2455
.920	.5353	.5521	.6574	.6473	.7057	.6392
.950			.8265		.8114	
1.000	.6258	.0000	.7782	.7251	.7271	.0000

DATE 05 JUN 75

TABULATED DATA - IH18

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IH18 0898 + T8 + S6 ORBITER WING SURFACE

(RPQHD1) ( 24 MAR 75 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.6100 IN. YMRP = .0000 Y/BW  
 BREF = 936.6820 IN. ZMRP = .0000 Z  
 SCALE = .0060

## PARAMETRIC DATA

MACH = 3.700 ALPHA = .000  
 BETA = .000 DELTA = .175

RN/L ( 1 ) = 1.930 HAW/HT( 1 ) = .850 MACH = 3.700 TO = 719.000 HO = 3968.500 ALPHA = .000

## SECTION ( 1 ) ORBITER WING

## DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

## X/C

.175		.0810
.200		.0885
.225	.0667	
.250	.0654	.1015
.300	.0264	.0898
.400	.0691	.0621
.500	.0572	.0513
.700	.0432	.0375
.850		.0348
.875		.0255
.900	.0252	

RN/L ( 1 ) = 1.930 HAW/HT( 2 ) = .900 MACH = 3.700 TO = 719.000 HO = 3968.500 ALPHA = .000

## SECTION ( 1 ) ORBITER WING

## DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

## X/C

.175		.0460
.200		.0495
.225	.0353	
.250	.0346	.0573
.300	.0153	.0414
.400	.0320	.0360
.600	.0308	.0301
.700	.0237	.0222
.850		.0218
.875		.0155
.900	.0140	



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TABULATED DATA - IH18

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IH18 0890 + T0 + S6 ORBITER WING SURFACE

(RPO4011)

RN/L ( 1 ) = 1.930 HAH/HT ( 3 ) = 1.000 MACH = 3.700 T0 = 719.000 HD = 3968.500 ALPHA = .000

SECTION ( 1 ) ORBITER WING

DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

X/C

.175		.0247	
.200		.0263	
.225	.0182		
.250	.0178		.0306
.300	.0083	.0223	.0278
.400	.0165	.0196	
.500	.0160	.0165	.0226
.700	.0125	.0123	.0166
.850			.0125
.875		.0087	
.900	.0074		

RN/L ( 2 ) = 4.870 HAH/HT ( 1 ) = .850 MACH = 3.700 T0 = 724.000 HD = 9462.500 ALPHA = .000

SECTION ( 1 ) ORBITER WING

DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

X/C

.175		.0920	
.200		.1002	
.225	.0098		
.250	.0904		.1107
.300	.0325	.0904	.0986
.400	.0916	.0860	
.500	.0919	.0766	.0757
.700	.0848	.0615	.0510
.850			.0356
.875		.0370	
.900	.0412		

RN/L ( 2 ) = 4.570 HAH/HT ( 2 ) = .900 MACH = 3.700 T0 = 724.000 HD = 9462.500 ALPHA = .000

SECTION ( 1 ) ORBITER WING

DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

X/C

.175		.0481	
.200		.0512	
.225	.0433		
.250	.0430		.0568
.300	.0186	.0467	.0519
.400	.0426	.0445	
.500	.0428	.0398	.0424

IH16 0898 + T8 + S6 ORBITER HING SURFACE

(RPN01)

RN/L ( 2 ) = 4.570 HAW/HT( 2 ) = .900

SECTION ( 1 ) ORBITER HING

DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

X/C

.700	.0395	.0325	.0302
.850			.0218
.875		.0213	
.900	.0219		

RN/L ( 2 ) = 4.570 HAW/HT( 3 ) = 1.000 HACH = 3.700 TO = 724.000 HO = 9462.500 ALPHA = .000

SECTION ( 1 ) ORBITER HING

DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

X/C

.175		.0248	
.200		.0259	
.225	.0213		
.250	.0210		.0288
.300	.0100	.0237	.0267
.400	.0206	.0226	
.500	.0207	.0203	.0226
.700	.0191	.0167	.0167
.850			.0123
.875		.0115	
.900	.0113		

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TABULATED DATA - IH18

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IH18 089B + TG + SS ORBITER WING SURFACE

(RPQH02) ( 24 MAR 75 )

## REFERENCE DATA

SREF = 2880.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 471.8100 IN. YMRP = .0000 Y/BW  
 BREF = 938.8820 IN. ZMRP = .0000 Z  
 SCALE = .0080

## PARAMETRIC DATA

MACH = 3.700 ALPHA = -5.000  
 BETA = .000 DELTAH = .175

RN/L ( 1 ) = 1.990 HAH/HT ( 1 ) = .850 MACH = 3.700 TO = 708.000 HO = 3951.000 ALPHA = -5.000

## SECTION ( 1 ) ORBITER WING

## DEPENDENT VARIABLE H/HREF

ZY/B .4000 .6000 .8000

## X/C

.175	.0889	
.200	.0976	
.225	.0755	
.250	.0804	.1040
.300	.0313	.0777 .0918
.400	.0789	.0647
.500	.0693	.0534 .0685
.700	.0474	.0370 .0456
.850		.0331
.875	.0236	
.900	.0263	

RN/L ( 1 ) = 1.990 HAH/HT ( 2 ) = .900 MACH = 3.700 TO = 708.000 HO = 3961.000 ALPHA = -5.000

## SECTION ( 1 ) ORBITER WING

## DEPENDENT VARIABLE H/HREF

ZY/B .4000 .6000 .8000

## X/C

.175	.0467	
.200	.0513	
.225	.0368	
.250	.0386	.0562
.300	.0168	.0421 .0505
.400	.0387	.0359
.500	.0347	.0301 .0395
.700	.0247	.0213 .0273
.850		.0202
.875	.0139	
.900	.0140	



IH15 0895 + T8 + S6 ORBITER WING SURFACE

(RPOH02)

RN/L ( 1 ) = 1.990 HAH/HT ( 3 ) = 1.000 HACH = 3.700 TO = 708.000 HO = 3961.000 ALPHA = -5.000

SECTION ( 1 ) ORBITER WING

DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

X/C

.175		.0243	
.200		.0263	
.225	.0182		
.250	.0189		.0293
.300	.0087	.0220	.0266
.400	.0191	.0180	
.500	.0174	.0161	.0214
.700	.0128	.0115	.0151
.850			.0113
.875		.0077	
.900	.0073		

RN/L ( 2 ) = 4.560 HAH/HT ( 1 ) = .850 HACH = 3.700 TO = 725.000 HO = 9453.000 ALPHA = -5.000

SECTION ( 1 ) ORBITER WING

DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

X/C

.175		.0806	
.200		.0900	
.225	.1052		
.250	.1275		.0939
.300	.0420	.0745	.0834
.400	.1185	.0662	
.500	.1009	.0598	.0633
.700	.0791	.0530	.0434
.850			.0312
.875		.0342	
.900	.0393		

RN/L ( 2 ) = 4.560 HAH/HT ( 2 ) = .900 HACH = 3.700 TO = 725.000 HO = 9453.000 ALPHA = -5.000

SECTION ( 1 ) ORBITER WING

DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

X/C

.175		.0447	
.200		.0488	
.225	.0496		
.250	.0560		.0518
.300	.0237	.0414	.0470
.400	.0550	.0371	
.500	.0480	.0338	.0374

DATE 05 JAN 75

TABULATED DATA - IH16

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IH16 089B + T8 + S6 ORBITER WING SURFACE

(RPQW02)

RN/L ( 2 ) = 4.560 HAH/HT( 2 ) = .900

SECTION ( 1 ) ORBITER WING

DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

X/C

.700	.0398	.0298	.0267
.850			.0196
.875		.0204	
.900	.0218		

RN/L ( 2 ) = 4.560 HAH/HT( 3 ) = 1.000 HACH = 3.700 TO = 725.000 HO = 9453.000 ALPHA = -5.000

SECTION ( 1 ) ORBITER WING

DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

X/C

.175		.0236	
.200		.0255	
.225	.0241		
.250	.0264		.0273
.300	.0126	.0219	.0251
.400	.0265	.0198	
.500	.0242	.0179	.0206
.700	.0200	.0159	.0151
.850			.0113
.875		.0113	
.900	.0115		

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OF POOR QUALITY

IH16 089B + TB + SB ORBITER WING SURFACE

(RPQH13) ( 24 MAR 75 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/BW  
 BREF = 936.6820 IN. ZMRP = .0000 Z  
 SCALE = .0050

## PARAMETRIC DATA

MACH = 3.700 ALPHA = .000  
 BETA = .000 DELTAH = .069

RN/L ( 1 ) = 1.990 HAH/HT ( 1 ) = .850 MACH = 3.700 TO = 723.000 HO = 4087.200 ALPHA = .000

## SECTION ( 1 ) ORBITER WING

## DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

## X/C

.175 .0712  
 .200 .0870  
 .225 .0722  
 .250 .0727 .1040  
 .300 .0719 .0718 .0907  
 .400 .0633 .0595  
 .500 .0544 .0517 .0706  
 .700 .0378 .0355 .0488  
 .850 .0353  
 .875 .0235  
 .900 .0215

RN/L ( 1 ) = 1.990 HAH/HT ( 2 ) = .900 MACH = 3.700 TO = 723.000 HO = 4087.200 ALPHA = .000

## SECTION ( 1 ) ORBITER WING

## DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

## X/C

.175 .0405  
 .200 .0481  
 .225 .0370  
 .250 .0370 .0579  
 .300 .0371 .0405 .0514  
 .400 .0331 .0342  
 .500 .0291 .0299 .0415  
 .700 .0207 .0209 .0296  
 .850 .0219  
 .875 .0142  
 .900 .0119



DATE 06 JUN 75

TABULATED DATA - IH16

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IH16 0898 + T8 + S6 ORBITER WING SURFACE

(RPOW13)

RN/L ( 1 ) = 1.990 HAW/HT( 3 ) = 1.000 MACH = 3.700 TO = 723.000 HO = 4087.200 ALPHA = .000

SECTION ( 1 ) ORBITER WING

DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

X/C

.175		.0217	
.200		.0254	
.225	.0188		
.250	.0187		.0307
.300	.0189	.0216	.0275
.400	.0169	.0185	
.500	.0151	.0163	.0228
.700	.0109	.0115	.0166
.850			.0124
.875		.0079	
.900	.0063		

RN/L ( 2 ) = 4.550 HAW/HT( 1 ) = .850 MACH = 3.700 TO = 728.000 HO = 9498.400 ALPHA = .000

SECTION ( 1 ) ORBITER WING

DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

X/C

.175		.0716	
.200		.0893	
.225	.0850		
.250	.0910		.1041
.300	.0902	.0729	.0917
.400	.0819	.0628	
.500	.0705	.0557	.0710
.700	.0553	.0436	.0490
.850			.0342
.875		.0286	
.900	.0337		

RN/L ( 2 ) = 4.550 HAW/HT( 2 ) = .900 MACH = 3.700 TO = 728.000 HO = 9498.400 ALPHA = .000

SECTION ( 1 ) ORBITER WING

DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

X/C

.175		.0412	
.200		.0498	
.225	.0441		
.250	.0459		.0572
.300	.0461	.0414	.0514
.400	.0423	.0362	
.500	.0373	.0320	.0417

DATE 08 JUN 78

TABULATED DATA - IH18

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IH18 0898 + TB + SB ORBITER WING SURFACE

(RPQNI3)

RN/L ( 2 ) = 4.650 HAH/HT( 2 ) = .800

SECTION ( 1 ) ORBITER WING

DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

X/C

.700	.0286	.0254	.0301
.850			.0217
.875		.0174	
.900	.0180		

RN/L ( 2 ) = 4.650 HAH/HT( 3 ) = 1.000 MACH = 3.700 TO = 728.000 HO = 9498.400 ALPHA = .000

SECTION ( 1 ) ORBITER WING

DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

X/C

.175		.0223	
.200		.0262	
.225	.0225		
.250	.0230		.0301
.300	.0233	.0222	.0274
.400	.0215	.0196	
.500	.0182	.0173	.0228
.700	.0153	.0138	.0170
.850			.0125
.875		.0098	
.900	.0101		

DATE 08 JUN 75

TABULATED DATA - IH16

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IH16 089B + T8 + S8 ORBITER WING SURFACE

(RPQH14) ( 24 MAR 75 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT.    XMRP = .6500 X/LB  
 LREF = 474.8100 IN.    YMRP = .0000 Y/BH  
 BREF = 938.6820 IN.    ZMRP = .0000 Z  
 SCALE = .0050

## PARAMETRIC DATA

MACH = 3.700    ALPHA = -5.000  
 BETA = .000    DELTAH = .369

RN/L ( 1 ) = 2.000    HAW/HT ( 1 ) = .850    MACH = 3.700    TO = 720.000    HO = 4102.800    ALPHA = -5.000

## SECTION ( 1 ) ORBITER WING

## DEPENDENT VARIABLE H/HREF

2Y/B    .4000    .6000    .8000

## X/C

.175		.0796	
.200		.0977	
.225	.0897		
.250	.0868		.1111
.300	.0865	.0784	.0962
.400	.0742	.0663	
.500	.0603	.0535	.0716
.700	.0397	.0352	.0482
.850			.0355
.875		.0235	
.900	.0233		

RN/L ( 1 ) = 2.000    HAW/HT ( 2 ) = .900    MACH = 3.700    TO = 720.000    HO = 4102.800    ALPHA = -5.000

## SECTION ( 1 ) ORBITER WING

## DEPENDENT VARIABLE H/HREF

2Y/B    .4000    .6000    .8000

## X/C

.175		.0420	
.200		.0495	
.225	.0416		
.250	.0397		.0573
.300	.0398	.0411	.0507
.400	.0351	.0358	
.500	.0300	.0295	.0399
.700	.0207	.0200	.0281
.850			.0211
.875		.0137	
.900	.0125		



IH16 089B + T8 + S6 ORBITER WING SURFACE

(RPQW14)

RN/L ( 1 ) = 2.000 HAH/HT( 3 ) = 1.000 MACH = 3.700 TO = 720.000 HO = 4102.800 ALPHA = -5.000

SECTION ( 1 ) ORBITER WING

DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

X/C

.175		.0216	
.200		.0249	
.225	.0200		
.250	.0190		.0291
.300	.0192	.0211	.0261
.400	.0171	.0186	
.500	.0149	.0156	.0212
.700	.0106	.0109	.0153
.850			.0116
.875		.0075	
.900	.0065		

RN/L ( 2 ) = 4.470 HAH/HT( 1 ) = .850 MACH = 3.700 TO = 723.000 HO = 9261.100 ALPHA = -8.000

SECTION ( 1 ) ORBITER WING

DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

X/C

.175		.0684	
.200		.0877	
.225	.1414		
.250	.1420		.0921
.300	.1269	.0700	.0912
.400	.1033	.0595	
.500	.0814	.0476	.0606
.700	.0580	.0321	.0417
.850			.0301
.875		.0222	
.900	.0348		

RN/L ( 2 ) = 4.470 HAH/HT( 2 ) = .900 MACH = 3.700 TO = 723.000 HO = 9261.100 ALPHA = -5.000

SECTION ( 1 ) ORBITER WING

DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

X/C

.175		.0383	
.200		.0472	
.225	.0599		
.250	.0593		.0505
.300	.0560	.0389	.0455
.400	.0485	.0339	
.500	.0406	.0275	.0358

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TABULATED DATA - IH16

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IH16 0898 + T8 + S6 ORBITER WING SURFACE

(RPQW14)

RN/L ( 2 ) = 4.470 HAH/HT ( 2 ) = .900

SECTION ( 1 ) ORBITER WING

DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

X/C

.700	.0300	.0190	.0256
.850			.0189
.875		.0134	
.900	.0189		

RN/L ( 2 ) = 4.470 HAH/HT ( 3 ) = 1.000 HACH = 3.700 TO = 723.000 HD = 9261.100 ALPHA = -5.000

SECTION ( 1 ) ORBITER WING

DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

X/C

.175		.0204	
.200		.0245	
.225	.0278		
.250	.0274		.0266
.300	.0264	.0206	.0242
.400	.0236	.0182	
.500	.0203	.0149	.0196
.700	.0152	.0104	.0144
.850			.0109
.875		.0075	
.900	.0098		

DATE 06 JUN 75

TABULATED DATA - IH16

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IH16 0899+78+66+GRIT ORBITER WING SURFACE

(RPOH15) ( 24 MAR 75 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = .6500 X/LB  
 LREF = 474.8100 IN. YMRP = .0000 Y/BW  
 BREF = 936.6820 IN. ZMRP = .0000 Z  
 SCALE = .0060

## PARAMETRIC DATA

MACH = 3.700 ALPHA = .000  
 BETA = .000 DELTAH = .175  
 GRITND = 25.000

RN/L ( 1 ) = 1.890 HAH/HT ( 1 ) = .850 MACH = 3.700 TO = 725.000 HO = 3909.300 ALPHA = .000

## SECTION ( 1 ) ORBITER WING

## DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

## X/C

.175	.0731
.200	.0885
.225	.0652
.250	.0645
.300	.0663
.400	.0596
.500	.0542
.700	.0377
.850	.0355
.875	.0249
.900	.0206

RN/L ( 1 ) = 1.890 HAH/HT ( 2 ) = .900 MACH = 3.700 TO = 725.000 HO = 3909.300 ALPHA = .000

## SECTION ( 1 ) ORBITER WING

## DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

## X/C

.175	.0421
.200	.0496
.225	.0346
.250	.0340
.300	.0351
.400	.0315
.500	.0292
.700	.0209
.850	.0224
.875	.0152
.900	.0116



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TABULATED DATA - 1H16

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IH16 0899+T8+S6+ORIT ORBITER WING SURFACE

(RPQW15)

RN/L ( 1 ) = 1.890 HAW/HT( 3 ) = 1.000 MACH = 3.700 TO = 725.000 HO = 3969.300 ALPHA = .000

SECTION ( 1 ) ORBITER WING

DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

X/C

.175		.0228	
.200		.0264	
.225	.0178		
.250	.0175		.0311
.300	.0181	.0230	.0281
.400	.0162	.0202	
.500	.0152	.0172	.0231
.700	.0111	.0122	.0170
.850			.0129
.875		.0085	
.900	.0062		

RN/L ( 2 ) = 4.620 HAW/HT( 1 ) = .850 MACH = 3.700 TO = 723.000 HO = 9484.500 ALPHA = .000

SECTION ( 1 ) ORBITER WING

DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

X/C

.175		.0612	
.200		.1044	
.225	.0857		
.250	.0840		.1153
.300	.0823	.0881	.1009
.400	.0826	.0787	
.500	.0867	.0707	.0772
.700	.0852	.0570	.0520
.850			.0354
.875		.0333	
.900	.0448		

RN/L ( 2 ) = 4.620 HAW/HT( 2 ) = .900 MACH = 3.700 TO = 723.000 HO = 9484.500 ALPHA = .000

SECTION ( 1 ) ORBITER WING

DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

X/C

.175		.0446	
.200		.0347	
.225	.0423		
.250	.0415		.0608
.300	.0413	.0472	.0544
.400	.0403	.0428	
.500	.0417	.0384	.0439

IH16 0898+T8+S6+ORIT ORBITER WING SURFACE

(RPQW15)

RN/L ( 2 ) = 4.620 HAW/HT( 2 ) = .900

SECTION ( 1 ) ORBITER WING

DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

X/C

.700	.0408	.0316	.0311
.850			.0220
.875		.0197	
.900	.0241		

RN/L ( 2 ) = 4.620 HAW/HT( 3 ) = 1.000 MACH = 3.700 T0 = 723.000 HD = 9494.500 ALPHA = .000

SECTION ( 1 ) ORBITER WING

DEPENDENT VARIABLE H/HREF

2Y/B .4000 .6000 .8000

X/C

.175		.0234	
.200		.0281	
.225	.0214		
.250	.0206		.0311
.300	.0207	.0245	.0283
.400	.0199	.0224	
.500	.0205	.0201	.0236
.700	.0199	.0167	.0173
.850			.0125
.875		.0109	
.900	.0125		